



THE EFFECT OF SUPERIOR AND INFERIOR EXTREMITY POINT ACUPUNCTURE THERAPY ON IMPROVING DAILY LIVING ACTIVITIES IN STROKE PATIENTS

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ABSTRACT

Stroke is a pathological condition that occurs due to the interruption or reduction of blood flow to certain parts of the brain. This condition can be caused by two main mechanisms: blockage of cerebral blood vessels or the sudden rupture of blood vessels in the brain. As a result, there is a significant decrease in the supply of oxygen and nutrients to the affected brain tissue. One of the common symptoms of stroke is weakness on one side of the body, known as hemiparesis, which leads to difficulties in performing activities of daily living (ADL). This study aimed to analyze the effect of acupuncture therapy (at superior and inferior extremity points) on improving activities of daily living (ADL) in stroke patients at the Holistic Nursing Therapy Clinic in Probolinggo. The research method used was a pre-experimental design with a one-group pre-test and post-test approach. The sample consisted of 91 respondents, selected using accidental sampling from May to June 2025. The research instrument used was the Barthel Index questionnaire sheet, with a validity value of $r > (0,4438)$ and a reliability test of $(0,884)$. The intervention was administered three times per week, with each session lasting one hour, for four weeks. Data were analyzed using the Wilcoxon test. The results showed that before the acupuncture therapy intervention, most respondents were in the moderate category (42 respondents, 46.2%). After the intervention, respondents were mostly in the independent and mild categories, each with 39 respondents (42.9%). The statistical analysis indicated that there was a significant effect of acupuncture therapy (at superior and inferior extremity points) on improving activities of daily living (ADL) in stroke patients, with a p-value of 0.001 ($p = 0.001 < \alpha = 0.05$). Acupuncture therapy has a positive impact on patients' physical condition, including improving muscle strength in extremities that were weakened due to stroke. It may also enhance blood flow and oxygenation to the brain, promote neuroplasticity and nerve regeneration, and ultimately improve the ability to perform activities of daily living.

Keywords: activities of daily living; acupuncture; stroke

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INTRODUCTION

Stroke is a pathological condition that occurs due to the cessation or restriction of blood flow to certain parts of the brain, which can be caused by two main mechanisms: blockage of blood vessels in the brain or sudden rupture of blood vessels in the brain. This condition causes a sharp decrease in the supply of oxygen and nutrients to the affected brain tissue. Stroke symptoms vary depending on the area of the brain affected, involving a number of clinical manifestations such as partial facial paralysis, difficulty speaking or slurred speech, paralysis of the limbs, and even extreme conditions such as coma that can lead to life-threatening patients. One of the symptoms of stroke that is often experienced is weakness on one side of the body or called hemiparesis, so that stroke sufferers experience disturbances in carrying out daily living activities (Rickiy Akbaril Okta F, et al. 2024).

Stroke prevalence data shows that this disease is the second leading cause of death worldwide. Ischemic and hemorrhagic strokes are the second leading cause of death globally after ischemic heart disease. Stroke is also the third leading cause of disability (Davies, 2021). An estimated 12.2 million people worldwide suffer from stroke each year. Of these, more than 16% of stroke cases affect the population aged 15-49 years and more than 62% are in those under 70 years of age. Each

year, 47% of strokes occur in men and 53% in women. The global annual stroke death rate is reported to be 6.5 million (WHO, 2022).

According to the 2023 Indonesian Health Survey by the Indonesian Ministry of Health, the prevalence of stroke was 10.9%. A total of 713,783 people suffer from stroke each year. East Kalimantan is the province with the highest stroke incidence in Indonesia, with 9,696 cases, or 14.7% of the total population. Furthermore, the highest number of stroke cases were found in the age group over 75 years. The prevalence of stroke in Indonesia reached 8.3 per thousand people aged 15 years and over in 2023 (Indonesian Ministry of Health, 2023). Meanwhile, the prevalence of stroke in East Java is above the national average of 9.0 per thousand people (East Java Health Office, 2024).

Based on the results of a preliminary study conducted on November 4, 2024, at the Holistic Nursing Therapy Clinic in Probolinggo, the average number of stroke patient visits per month was 154 patients. From the results of interviews with 10 respondents, it was found that all respondents experienced hemiparesis on one side of the body. Respondents said that their daily activities were assisted by family, and the only treatment they had received was medical treatment through check-ups at the hospital and never had physiotherapy. Respondents also said that this was their first time receiving acupuncture and acupressure (massage) therapy at the Holistic Nursing Therapy Clinic in Probolinggo.

Stroke is a neurological deficit, either local or global, with clinical signs that develop rapidly and can worsen over 24 hours or more, without a clear vascular cause, and can lead to death. Stroke is one of the diseases with the highest financial burden and therefore requires serious attention due to its impact on finances, the economy, and society (Ministry of Health of the Republic of Indonesia, 2023). Hemiparesis is a condition where one side of the body, from head to toe, experiences weakness, making it difficult to move. This condition is commonly experienced by stroke survivors and must be treated immediately because it can cause permanent weakness and paralysis. Stroke symptoms generally occur in the body part controlled by the damaged area of the brain. Symptoms experienced by stroke sufferers can include: Weakness on one side of the body (hemiparesis), weakness in the facial muscles that cause one side of the face to droop, numbness, difficulty speaking, dysarthria, which can interfere with daily activities (American Stroke Association, 2024).

Activities of daily living refer to basic skills required for self-care, such as eating, bathing, and mobility. There are two types of activities of daily living: basic and instrumental. Hygiene or personal care, dressing, toileting, transferring or ambulating, and eating are basic ADLs. More complex activities related to independent living in the community, such as financial planning and medication management, food storage, housekeeping, and communicating with others, are included in instrumental ADLs (Siti Sulaiha et al., 2022)

Stroke survivors' health recovery can be achieved using medical, alternative, or complementary treatments. Complementary therapy treatment methods have recently been widely developed. Complementary therapies that have been discovered include traditional herbal remedies, acupuncture, acupressure, cupping, and others. Factors such as confidence, finances, reactions to chemical drugs, and recovery rates are reasons why people use complementary therapies (Anak Agung Ayu Reka Andjani, 2023).

Acupuncture is part of complementary therapy or traditional Chinese medicine and offers many benefits by stimulating acupuncture points on the body (meridians) with acupuncture needles. Acupuncture has a clear impact on pain relief for patients, proving that acupuncture treatment is a better choice than other approaches or just using drugs. No significant side effects were reported when acupuncture therapy was administered clinically to patients (Aszar et al., 2018). In stroke

patients, some nerves have closed and it is difficult to keep the circulatory system open, while acupuncture stimulation at certain points opens blood vessels and increases blood flow. Acupuncture can also help repair worn-out nerve cells and find ways to regenerate new nerves by helping cells bypass damaged parts of the brain. This improves the condition of stroke patients, which is indicated by increased muscle strength and improved daily living activities (Pratama N & Alivian N, 2019).

Research by Anak Agung Ayu Reka Andjani (2023) suggests that acupuncture therapy for ischemic stroke patients can help restore the body's energy (Qi) balance by stimulating acupuncture points, thereby opening and improving blood circulation. The main acupuncture points used by practitioners are LI.4, LI.11, and ST.36. The effects felt after acupuncture treatment include feelings of comfort and calm, improved sleep quality, pain relief, increased appetite, and improved digestion. The results of Galih Noor Alivian's (2022) research entitled "The Effectiveness of Acupuncture Therapy for the Success of Post-Stroke Patient Rehabilitation: A Literature Review" obtained results based on the analysis conducted by the author, acupuncture therapy is effective in improving post-stroke rehabilitation. This therapy involves piercing the Yang Ming Meridian to facilitate the flow of the Ci-Meridian. Within this meridian there is a complex system of connections called acupuncture points (acupuncture points) that bind or relate to various functions and organs of the body. In stroke patients, because some nerve pathways have been blocked, it is difficult to maintain open circulation. With acupuncture stimulation at several acupuncture points will open blood vessels and increase blood flow. Based on the results obtained by these researchers that acupuncture is quite effective in the rehabilitation treatment of stroke patients. To get maximum results, stroke patients are advised not only to do acupuncture therapy. But also to do other therapeutic activities.

This research was conducted by providing acupuncture therapy to improve daily living activities in stroke patients, where acupuncture can help post-stroke rehabilitation by stimulating nerves and muscles, increasing blood flow, and increasing muscle strength in helping to improve the ADL needs of stroke patients. In addition, based on the journal mapping that has been done, there has been no research that has been done related to providing acupuncture to stroke patients to improve ADL needs. Based on the background above, the aim of this study is to determine the effect of acupuncture therapy (superior and inferior extremity points) on improving the activities of daily living (ADL) of stroke patients at the Holistic Nursing Therapy Clinic in Probolinggo.

METHOD

This study used a pre-experimental design using the one-group pre-post test design method. The population in this study were stroke patients with hemiparesis and hemiplegia. The sample in this study was 91 respondents taken using accidental sampling techniques. The study was conducted from May to June 2025 at the Holistic Nursing Therapy Clinic in Probolinggo. This research instrument used the Barthel Index questionnaire sheet, with a validity value of $r > (0.4438)$ and a reliability test of (0.884) , acupuncture intervention was given 3 times in 1 week with a time of 1 hour for 4 weeks. The analysis test used the Wilcoxon test.

RESULT

Activities of Daily Living (ADL) in Stroke Patients Before Acupuncture Therapy

Table 1:

Activities of Daily Living (ADL) in Stroke Patients Before Acupuncture Therapy (Superior and Inferior Extremity Points)

Activities Daily Living	f	%
Independent	0	0
Light Dependence	31	34,1
Moderate Dependence	42	46,2
Heavy Dependence	18	19,8

Based on table 1, the number of respondents was 91 respondents, most of the respondents had activities daily living (ADL) before being given acupuncture therapy intervention, namely the moderate category, namely 42 respondents (46.2%).

Activities Daily Living (ADL) of Stroke Patients After Acupuncture Therapy

Table 2:
Activities Daily Living (ADL) of Stroke Patients After Acupuncture Therapy (Superior and Inferior Extremity Points)

No.	Activities Daily Living	Frequency	Percentage (%)
1.	Independent	39	42,9
2.	Light Dependence	39	42,9
3.	Moderate Dependence	13	14,3
4.	Heavy Dependence	0	0
	Total	91	100

Based on table 2, the number of respondents was 91 respondents, most of the respondents had activities daily living (ADL) after being given acupuncture therapy intervention, namely independent and light categories, each with 39 respondents (42.9%).

Cross-sectional Table of Activities Daily Living (ADL) in Stroke Patients Before and After Acupuncture Therapy

Table 3:
Cross-sectional Table of Frequency Distribution of Activities Daily Living (ADL) in Stroke Patients Before and After Acupuncture Therapy Intervention

Activities Daily Living		After Being Given Acupuncture Intervention						Total	
		Independence		Light Dependence		Moderate Dependence		f	%
Before Acupuncture Intervention Is Given	Light Dependence	f	%	f	%	f	%		
	Moderate Dependence	31	34,1	0	0	0	0	31	34,1
	Heavy Dependence	8	8,8	34	37,4	0	0	42	46,1
	Total	0	0	5	5,5	13	14,3	18	19,8
		39	42,9	39	42,9	13	14,3	91	100

Based on table 3 above, it was found that the majority of daily living activities (ADL) before and after acupuncture intervention were given, namely the mild category became independent for 31 respondents (34.1%) and moderate dependence became light dependence for 34 respondents (37.4%).

Statistical Test Results of the Effect of Acupuncture Therapy on Improving Activities of Daily Living in Stroke Patients

Based on the results of statistical tests using the Wilcoxon test using SPSS, the Sig. (2 tailed) result is 0.001. The analysis results obtained $p = 0.001$ so that $p = 0.001 < \alpha = 0.05$. From the results of the analysis, it can be concluded that H_1 is accepted, meaning there is an effect of acupuncture therapy (Superior and Inferior Extremity Points) on increasing activities of daily living (ADL) in stroke patients at the Holistic Nursing Therapy Clinic, Probolinggo.

DISCUSSION

Activities of Daily Living (ADL) in Stroke Patients Before Acupuncture Therapy Intervention (Superior and Inferior Extremity Points)

Table 1 shows a total of 91 respondents. Most respondents had moderate activities of daily living (ADL) before acupuncture therapy intervention: 42 respondents (46.2%), mild (31 respondents (34.1%), and severe (18 respondents (19.8%).

Stroke patients generally experience a significant decline in Activities of Daily Living (ADL) abilities before receiving any intervention, such as acupuncture therapy. ADLs include basic daily

activities such as bathing, dressing, eating, transferring, and using the toilet. Physical impairments such as hemiparesis (weakness on one side of the body) due to stroke often make patients highly dependent on others for assistance with these basic needs (Woro Hapsari, 2018).

The study showed that before the intervention, most of the stroke patient respondents were still at a mild to severe level of dependency. The results of this study are in line with the results of Lia Nurul Latifah's study (2016) entitled fulfillment of daily living activities needs of stroke patients by nurses in hospitals, which found that the implementation of nurses in fulfilling the ADL needs of stroke patients was in the less category (88.10%), with details in assessing daily activities (59.52%), helping with daily activities (66.67%), and teaching daily activities to families and stroke patients (90.48%) being in the less category.

According to researchers, stroke is caused by an ischemic or hemorrhagic mechanism that often precedes trauma or arterial damage, which causes blocked blood flow or a lack of circulating blood supply to the brain area, which can clinically lead to loss or dysfunction in the affected area. One of the symptoms in stroke patients is nerve paralysis or neurological deficits, so that patients experience difficulties in fulfilling daily living activities (ADL). Many factors can influence the level of independence of respondents' ADLs, such as age; older people tend to experience a more severe decline in ADL abilities. The severity of the stroke also affects independence in carrying out ADLs; the more severe the neurological deficit, the lower the patient's ADL independence. Family and nurse support also play an important role in helping patients fulfill ADLs.

Activities of Daily Living (ADL) in Stroke Patients After Acupuncture Therapy Intervention (Superior and Inferior Extremity Points)

Table 2 shows that of the 91 respondents, most of them achieved activities of daily living (ADL) after acupuncture therapy intervention. These included independent and mild (39 respondents (42.9%), and moderate (13 respondents (14.3%)), respectively.

The results of this study align with those of Ni Ketut Sujati et al., (2025) on the application of self-care support and acupuncture to stroke patients with self-care deficits. The results showed a significant improvement in the patients' self-care abilities, including eating, bathing, dressing, and toileting. Acupuncture therapy also helped improve muscle strength and the body's energy balance. Caregivers experienced increased knowledge and skills in caring for stroke patients and demonstrated behaviors more in line with recommendations. Stroke patients who received a combination of self-care support and acupuncture therapy experienced significant improvements in their ability to perform daily activities such as eating, bathing, dressing, and toileting. The Barthel Index score, which measures ADL independence, improved, although the patient remained in the severely dependent category. Acupuncture therapy also improved the patient's physical condition, such as muscle strength in the extremities weakened by the stroke.

The results of this study also align with those of Nur Fikriyah Eka Agustin et al. (2020), who stated that a Wilcoxon test using a statistical test at the Jember Acupuncture and Herbal Clinic showed a P-value of 0.001, which is less than the critical threshold of 0.05. This means that H1 is accepted, indicating that there is an effect of acupuncture therapy on physical mobility in stroke patients at the Jember Acupuncture and Herbal Clinic.

According to the researchers, acupuncture can improve activities of daily living (ADL) in stroke patients based on various physiological and clinical mechanisms that support the recovery of motor function and patient independence. Acupuncture can improve cerebral circulation by stimulating specific points that open blood vessels and increase blood flow and oxygenation to the brain affected by stroke. This reduces tissue damage and helps the recovery of surviving neurons, resulting in improved motor and nerve function. In addition, acupuncture can also stimulate

neuroplasticity and nerve regeneration. Acupuncture is thought to stimulate the brain's ability to form new neural pathways, which helps improve motor and cognitive function. By increasing neuroplasticity, patients can recover more quickly and perform daily activities. Acupuncture can also play a role in regulating neurotransmitters and activating the nervous system. Overall, acupuncture acts as a biological stimulus that improves circulation and nerve function and optimizes the brain's healing process, thereby helping stroke patients increase their independence in activities of daily living (ADL).

Analysis of the Effect of Acupuncture Therapy (Superior and Inferior Extremity Points) on Improving Activities of Daily Living (ADL) in Stroke Patients

Based on Table 3 above, it is found that most of the activities of daily living (ADL) before and after acupuncture intervention were mildly independent (31 respondents (34.1%)), and moderately dependent (34 respondents (37.4%)).

Based on the results of statistical tests using the Wilcoxon test using SPSS, the Sig. (2-tailed) was 0.001. The analysis showed $p = 0.001$, so $p = 0.001 < \alpha = 0.05$. From these results, it can be concluded that H1 is accepted, meaning there is an effect of acupuncture therapy (Superior and Inferior Extremity Points) on improving activities of daily living (ADL) in stroke patients at the Holistic Nursing Therapy Clinic in Probolinggo.

The results of this study align with those of Dodik Hartono et al. (2021) on the effectiveness of acupuncture meridian points in increasing muscle strength in stroke patients. Data analysis of the intervention group revealed significant muscle strength in the hands ($p = 0.003$; $\alpha = 0.05$) and legs ($p = 0.005$; $\alpha = 0.05$), with $p < 0.05$. Therefore, it can be concluded that there was a significant difference in muscle strength in the intervention group before and after acupuncture. The findings of this study indicate a significant effect of acupuncture on lower and upper muscle strength.

These results align with those of You Zhang et al. (2024) who found that stroke episodes are a significant part of cerebrovascular disease worldwide, often resulting in various neurological disorders such as hemiparesis, spasticity, dysphagia, sensory dysfunction, cognitive impairment, depression, aphasia, and other sequelae. These dysfunctions significantly reduce patients' quality of life and place a substantial burden on their families and communities. Consequently, post-stroke neurological function recovery remains a primary goal of clinical treatment using acupuncture. Numerous clinical studies have demonstrated the efficacy of acupuncture in improving post-stroke neurological dysfunction.

According to research, acupuncture therapy has a positive effect on improving activities of daily living (ADL) in stroke patients. The study found that stroke patients who underwent acupuncture therapy experienced significant improvements in their ability to perform daily activities such as eating, bathing, dressing, and using the toilet. This improvement was reflected in the Barthel Index score, indicating improved independence, although the patients remained in the highly dependent category. Furthermore, acupuncture therapy also had a positive impact on the patients' physical condition, including increased muscle strength in extremities previously weakened by the stroke. Acupuncture therapy, when combined with cognitive training or standard physical rehabilitation, can effectively improve motor and cognitive function in stroke patients, contributing to improved ADL.

Theoretically, acupuncture is believed to improve ADL by increasing blood flow and oxygenation to the brain, promoting neuroplasticity and nerve regeneration, reducing inflammation, and regulating neurotransmitter balance, which supports the recovery of motor function and independence. Acupuncture therapy is a promising complementary therapy modality for improving ADL abilities in stroke patients. This therapy can accelerate the recovery of motor function and

increase patient independence in daily activities, especially if given continuously and acupuncture therapy can be an effective choice of therapy in stroke rehabilitation.

CONCLUSION

Based on the research results, it can be concluded that acupuncture therapy on the superior and inferior extremity points has an effect on improving Activities of Daily Living (ADL) in stroke patients. Before being given therapy, most patients were in the moderate ADL category, namely 42 respondents (46.2%). After being given acupuncture therapy, most patients experienced an increase in ADL abilities to the independent and light categories, each of which was 39 respondents (42.9%). The results of the statistical test showed a value of $p = 0.001$ which is smaller than $\alpha = 0.05$, so it can be concluded that there is a significant effect of acupuncture therapy on improving ADL in stroke patients at the Holistic Nursing Therapy Clinic in Probolinggo.

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