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ORIGINAL



Integration of Batak Angkola Local Wisdom "Poda Na Lima" In Secondary Stroke Prevention: An Interdisciplinary

Integración de la sabiduría local "Poda Na Lima" de Batak Angkola en la prevención secundaria del ictus: un enfoque interdisciplinario

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ABSTRACT

Objective: this study aims to explore the integration of *Poda Na Lima*, a form of local wisdom from the Batak Angkola ethnic group, in the context of secondary stroke prevention.

Method: this qualitative study was designed based on an interpretive paradigm using a philosophical hermeneutic approach. Data and information were obtained from ten participants, including health academics, healthcare practitioners, traditional leaders, religious figures, and community leaders. Data collection was conducted through a Focus Group Discussion (FGD) and analyzed using content analysis.

Results: the results show five main themes including 1) Maintaining Heart Health; 2) Maintaining Body Hygiene; 3) Maintaining Clothing Cleanliness; 4) Maintaining Home Cleanliness; and 5) Maintaining Yard/Environment Cleanliness.

Conclusions: the findings of this study indicate that the local wisdom of *Poda Na Lima* can serve as a valuable guide in secondary stroke prevention, contributing to improved health outcomes among stroke survivors.

Keywords: Local Wisdom; *Poda Na Lima*; Secondary Prevention; Strokes; Qualitative Research.

RESUMEN

Objetivo: el objetivo de este estudio es explorar la integración de *Poda Na Lima*, una forma de sabiduría local del grupo étnico Batak Angkola, en el contexto de la prevención secundaria del ictus.

Método: este estudio cualitativo se diseñó basándose en un paradigma interpretativo que utiliza un enfoque filosófico hermenéutico. Los datos y la información se obtuvieron de diez participantes, entre los que se encontraban académicos del ámbito de la salud, profesionales sanitarios, líderes tradicionales, figuras religiosas y líderes comunitarios. La recopilación de datos se llevó a cabo mediante un grupo de discusión

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(FGD) y se analizó utilizando el análisis de contenido.

Resultados: los resultados muestran cinco temas principales, entre los que se incluyen: 1) Mantener la salud cardíaca; 2) Mantener la higiene corporal; 3) Mantener la limpieza de la ropa; 4) Mantener la limpieza del hogar; y 5) Mantener la limpieza del jardín/entorno.

Conclusiones: los resultados de este estudio indican que la sabiduría local de *Poda Na Lima* puede servir como una valiosa guía en la prevención secundaria de accidentes cerebrovasculares, contribuyendo a mejorar los resultados de salud entre los supervivientes de accidentes cerebrovasculares.

Palabras clave: Sabiduría Local; *Poda Na Lima*; Prevención Secundaria; Accidentes Cerebrovasculares; Investigación Cualitativa.

INTRODUCTION

Stroke is one of the leading causes of death and disability, and its cases continue to increase each year worldwide. According to the World Stroke Organization, more than 12,2 million people worldwide about 1 in 4 people over the age of 25 are expected to experience a stroke. In total, there are over 101 million stroke cases globally, with around 7,6 million new cases of ischemic stroke each year, making up 62 % of all stroke cases. According to the Indonesian Ministry of Health, stroke is the leading cause of death in Indonesia, with a prevalence of 8,3 per 1 000 people. North Sumatra is one of the provinces with the highest stroke rates, at 6,3 %. Without effective prevention and treatment, the number of stroke cases in Indonesia was predicted to double by 2020. In 2018, the stroke prevalence among people aged over 15, based on a doctor's diagnosis, was 10,9 %. In North Sumatra, the number was even higher, reaching 45,97 %. In Padangsidimpuan City, 30,63 % of stroke patients regularly went for check-ups, while 45,65 % did not follow up regularly, and 17,97 % never went for follow-up care.

Many studies have shown the importance of primary stroke prevention, but there is still limited evidence for secondary stroke prevention. (4) Lifestyle changes for secondary stroke prevention can have a positive impact on people who have had a stroke. These changes affect three main areas: lifestyle behavior, physical health outcomes, and overall well-being. Behavioral interventions have been shown to help increase physical activity and improve diet. For physical health, these interventions are effective in lowering blood pressure, cholesterol levels, and body mass index (BMI). In terms of overall outcomes, they also improve quality of life and knowledge about stroke. (5) However, changing behavior is not easy because it is influenced by personal, environmental, and social factors. Common barriers include limited knowledge and awareness about how lifestyle habits affect the risk of having another stroke. If patients do not feel the need to change habits such as diet, exercise, and stress management, behavior change is unlikely to occur. Even when patients understand the importance of change, this knowledge often does not turn into healthy habits. (6) One way to prevent disease is by using local social and cultural practices. These practices such as community habits, values, and beliefs can strongly affect people's health. Studies show that things like diet, exercise, traditional healing, social support, and how people view illness all play a role. Health programs should respect and include these cultural practices to help improve community health and well-being. (7) Indonesia's rich cultural diversity influences many efforts in health care. Whether people realize it or not, cultural beliefs, values, and traditional knowledge shape how communities think and act, especially in preventing secondary strokes. This idea aligns with the concept of transcultural nursing, which focuses on providing care that is respectful, holistic, and fits the patient's cultural background to help maintain or restore health. (8)

Poda Na Lima is a traditional philosophy of the Angkola-Mandailing people, meaning "five pieces of advice." It is still preserved, especially in some Mandailing and Batak Angkola communities. Poda Na Lima contains teachings about maintaining cleanliness, passed down from ancestors. These teachings also include important values and character traits, which should be preserved and respected. (9) The core values of Poda Na Lima are: paias rohamu (clean your heart), paias pamatangmu (clean your body), paias parabitonmu (clean your clothes), paias bagasmu (clean your house), and paias yardmu (clean your yard or environment). The word paias, meaning "to clean," shows that this local wisdom encourages personal cleanliness in all aspects—heart, body, clothing, home, and surroundings. (10) The local wisdom of Poda Na Lima not only reflects strong cultural values but also has the potential to be used in secondary stroke prevention. By applying this cultural philosophy, it may help support healthy behavior changes and improve treatment adherence and regular health check-ups. However, there is still no comprehensive scientific study exploring how Poda Na Lima can be included in stroke prevention strategies. Therefore, this study aims to explore community perspectives on using Poda Na Lima as a form of local wisdom in secondary stroke prevention.

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METHOD

Design

This study is based on an interpretive paradigm using a philosophical hermeneutic approach. This approach helps explore the deeper meaning of texts and their connection to human thought and knowledge. Hermeneutics is a way of understanding human culture by treating it like a text to be interpreted.⁽¹¹⁾

Settings

This study was conducted in March 2025 in Padangsid Impuan City North Sumatra, Indonesia. The first author collected through focus group discussions.

Participants

Participants were selected based on the following inclusion criteria: they were the primary caregivers of patients with a primary stroke diagnosis, aged over 18 years, had been providing care for at least three months, were willing and able to communicate verbally, and had given informed consent after receiving a clear explanation of the study. The recruitment process involved coordination with hospitals and community health centers (Puskesmas) to appoint staff with expertise in stroke care, as well as direct outreach to academics specializing in transcultural nursing. Additionally, community leaders—including traditional, religious, and societal figures—who possess in-depth knowledge of the *Poda Na Lima* local wisdom of the Batak Angkola ethnic group in Padangsidimpuan City were contacted to support the identification and engagement of eligible participants.

Research ethics

This study received ethical approval from the Faculty of Public Health, Hasanuddin University, Makassar, with approval number 326/UN4.14.1/TP.01.02/2025.

Data collection

Data collection was carried out in February 2025 through Focus Group Discussions (FGDs). Two types of FGDs were used: (1) Single Focus Group, where the facilitator team and participants met in the same place and time to discuss one topic, and (2) Online Focus Group, using Zoom for two participants who could not attend in person. The discussions were guided by an interview guide.

Instruments

The interview guide was used after it was validated by two experts, with a Content Validity Index score of 0,85. The guide included four open-ended questions: 1) what do you know about the local wisdom of *Poda Na Lima*?, do you think *Poda Na Lima* can be used as a guide for secondary stroke prevention? Please explain; 3) what factors hinder the use of *Poda Na Lima* as a guide for secondary stroke prevention?, and 4) what promotion strategies can be developed to apply *Poda Na Lima* as a guide for secondary stroke prevention?.

Data analysis

Data analysis in this study was carried out using content analysis and presented in a narrative form. The analysis process included three steps: data reduction (simplifying and grouping data to make it easier to manage and understand), data display (presenting data in a clear and easy-to-understand way), and conclusion drawing/verification (interpreting the data and identifying the meaning from the analyzed information).

Trustworthiness

The principles of trustworthiness proposed by Guba et al.⁽¹²⁾ were used to ensure the study's rigor. Credibility was confirmed by researchers with extensive experience in qualitative studies, who reviewed the codes and agreed with the analysis. Therefore, the authors met weekly to discuss the data analysis results until reached the final consensus. D ependability was confirmed using participants who were purposively recruited until data were saturated. Conformability was assessed by rereading the original and translated transcripts several times to understand the whole context of the interview. Transferability refers to the thick descriptions for each category, which were used to enrich and strengthen the data explanation.

RESULTS

Table 1 presents the characteristics of the ten participants involved in this study. The group included six females and four males, with ages ranging from 38 to 50 years. Participants represented various educational backgrounds: one held a doctoral degree in public health, two held master's degrees (in public health and nursing), and five held bachelor's degrees, primarily in nursing. One participant had a bachelor's degree in law, and another had completed senior high school. Additionally, one participant held a master's degree in Islamic

studies, reflecting the inclusion of religious leaders alongside healthcare professionals and community figures. This diversity supports the interdisciplinary approach of the study.

Table 1. Participant Characteristics			
Participant	Gender	Age (years)	Educational Background
P1	Female	50	Ph.D. in Public Health
P2	Male	49	Master's in Public Health
P3	Female	42	Master's in Nursing
P4	Female	40	Bachelor's in Nursing
P5	Female	43	Bachelor's in Nursing
P6	Female	45	Bachelor's in Nursing
P7	Female	49	Bachelor's in Nursing
P8	Male	50	Master's in Islamic Studies
P9	Male	38	Bachelor's in Law
P10	Male	49	Senior High School

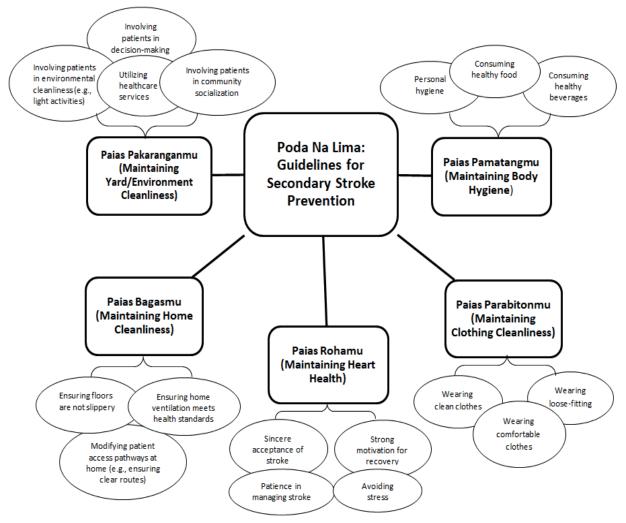


Figure 1. Thematic Framework of Cleanliness and Well-Being in Post-Stroke Patients

The data analysis revealed five main themes related to how stroke patients maintain cleanliness in their daily lives. The first theme is Maintaining Emotional Well-being. This includes being since accepting their condition, staying patient during recovery, having strong motivation to get better, and avoiding stress. These emotional aspects help patients stay positive and focused during the healing process. The second theme is Maintaining Personal Hygiene. Patients take care of their bodies by keeping themselves clean, eating healthy

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food, and drinking healthy beverages. These habits support their physical health and recovery. The third theme is Maintaining Clothing Hygiene. This involves wearing clean clothes that are loose and comfortable. Comfortable clothing helps patients move more easily and feel better throughout the day. The fourth theme is Maintaining Home Cleanliness. Patients and their families make the home safer and healthier by adjusting access paths, making sure floors are not slippery, and ensuring the house has proper ventilation. The fifth theme is Maintaining Yard and Environmental Cleanliness. Patients are encouraged to take part in cleaning the environment around their homes, join gardening activities, and interact with neighbors. These activities help improve both physical and emotional well-being.

Poda Paias Rohamu (Maintaining Heart Health)

Hermeneutic analysis revealed that one of the approaches to preventing secondary stroke is by maintaining emotional well-being. Participants expressed that cultivating a sincere heart—characterized by acceptance, patience, and the ability to manage stress while living with stroke—can play an important role in preventing a recurrence. This is reflected in the following participant statement:

"If someone who has experienced a stroke can go through the illness with sincerity and patience, it will reduce the risk of another stroke occurring. There is already research supporting this. In my view, practicing *Poda Na Lima*, especially the principle of purifying the heart, is very important in preventing stroke recurrence." [P1]

"Applying the philosophy of *Poda Na Lima* in daily life is beneficial in many aspects, including helping to keep the mind and heart free from stress when facing a stroke. When there is no stress, the body stays healthy. I believe this philosophy should be applied to help prevent secondary stroke." [P2]

"When God gives us a test through illness, we as humans must be able to accept it sincerely and with patience, so that God may give us the strength and spirit to endure it. The concept of *Poda Paias Rohamu* aligns with emotional cleansing—that is, being sincere and patient in facing illness." [P8]

Poda Paias Pamatangmu (Maintaining Body Hygiene)

Participants explained that applying one of the local wisdom principles of *Poda Na Lima*, namely maintaining the body, can help prevent secondary stroke. This includes practicing personal hygiene and consuming healthy food and beverages. Maintaining personal hygiene was perceived to have a positive impact on both the physical and mental health of stroke patients. In addition, consuming heart-healthy foods and drinks was strongly recommended as a preventive measure against stroke recurrence. This is reflected in the following participant statements:

"We at the health center, especially those working on the non-communicable diseases program, always educate patients with hypertension and stroke to keep their bodies clean. Good personal hygiene helps patients feel better physically and mentally. We also advise them to avoid traditional Batak foods that are high in salt and fat, and we always recommend eating more heart-healthy foods." [P4]

"The principle of *Poda Paias Pamatangmu* teaches us to keep our bodies clean and to eat healthy food. This means avoiding foods that can raise blood pressure or cholesterol, which can lead to another stroke. This is especially important because many Batak people often eat unhealthy foods." [P9]

"As a community leader, I strongly support using *Poda Na Lima* in daily life because it gives useful advice for staying healthy. For example, the advice to 'clean your body' is a reminder to take care of your hygiene to prevent illness." [P10]

Poda Paias Parabitonmu (Maintaining Clothing Cleanliness)

The research findings indicate that the *Poda Na Lima* principle, which emphasizes maintaining personal cleanliness, can serve as one of the preventive measures against secondary stroke. This includes wearing clean clothing to prevent exposure to disease-causing bacteria, as well as choosing loose-fitting and comfortable garments suitable for stroke patients. This is reflected in the following participant statements:

"Stroke patients are just like any other individuals who value cleanliness, including the cleanliness of their clothing. Wearing clean clothes helps them feel physically healthy. As a result, they feel more comfortable carrying out their daily activities." [P3]

"We provide education to patients and their families about the type of clothing that is appropriate for stroke patients. The recommended clothing should be loose-fitting and comfortable because stroke patients often have limited physical mobility." [P6]

Poda Paias Bagasmu (Maintaining Home Cleanliness)

All participants stated that the *Poda* principle of maintaining home cleanliness is highly relevant as a guideline for preventing recurrent stroke. This includes modifying the patient's access routes within the home to facilitate easier mobility, ensuring floors are non-slippery to prevent falls, and maintaining proper ventilation according to health standards to reduce air pollution. This is reflected in the following participant statements:

"The advice or *Poda* on maintaining home cleanliness includes installing handrails on the walls of bedrooms, bathrooms, and other rooms frequently used by stroke patients. This helps patients with their mobility. Additionally, floors—especially in bathrooms—must not be slippery to prevent falls." [P1]

"Home ventilation must meet health standards to prevent air pollution, particularly in densely populated areas. Proper air exchange is essential for maintaining a healthy environment for the patient." [P7]

"Cleanliness is part of faith, as reflected in *Poda Na Lima* 's guidance on maintaining the home clean. Maintaining home hygiene prevents disease-causing germs. Importantly, floors must not be slippery to avoid patient falls." [P8]

Poda Paias Pakaranganmu (Maintaining Yard/Environment Cleanliness)

The research findings indicate that the *Poda* principle of maintaining cleanliness in the yard and surrounding environment can help stroke patients prevent recurrent strokes. This includes patients in yard cleaning activities, encouraging participation in greening or gardening, and promoting social interaction with the community. These activities aim to improve patients' mobility and walking ability, enhance their mood, reduce boredom, and ultimately improve their quality of life. This is supported by the following participant statements:

"Stroke patients often experience feelings of boredom. Involving them in cleaning the yard is beneficial because going outside the house serves as a form of entertainment and distraction for the patient." [P1]

"In relation to *Poda Na Lima* 's principle of yard cleanliness, stroke prevention can be supported by involving patients in activities such as planting flowers or other plants. Although the physical activity may be light, it can boost the patient's confidence in their mobility. I agree that stroke patients should be encouraged to spend time outdoors." [P3]

"Even though someone is hospitalized due to stroke, family members can help by involving the patient in social activities, for example, taking them in a wheelchair to parties or other events. This helps broaden the patient's mindset and makes them feel useful, even if they cannot walk independently. In my opinion, one important meaning of *Poda Na Lima Paias Your Environment* is to continue engaging with the community." [P10]

"The *Poda* principle of maintaining environmental cleanliness for stroke patients also includes using healthcare services. Without access to such services, it would be difficult to prevent recurrent strokes. For example, regularly visiting community health centers or hospitals for health check-ups is essential, as these services are located within the patient's community." [P5]

DISCUSSION

Based on the research findings, it was discovered that the local wisdom of Poda Na Lima practiced by the Batak Angkola Mandailing community is highly relevant as a preventive measure for secondary stroke in stroke patients. The Batak Angkola people have long applied the Poda Na Lima concept to maintain environmental sustainability as well as mental and physical cleanliness. This is supported by previous studies which have identified that one of the contributing factors to secondary stroke is the failure to adopt clean and healthy lifestyle behaviors. The Poda Na Lima local wisdom encourages the practice of such clean and healthy behaviors, thereby aligning with evidence-based recommendations for stroke prevention. The concept of "Purify Your Heart" can be understood literally as the continuous effort to keep the heart free from anything that may cloud the mind. This involves cultivating sincerity and avoiding anxiety in daily life. The actualization of this value is carried out by refraining from behaviors that disturb mental peace and by consistently maintaining strong motivation, optimism, and a positive attitude in all aspects of life. (13) The research findings indicate that patients with primary stroke need to maintain emotional well-being by cultivating sincerity, patience, strong motivation to recover, and managing stress effectively throughout the treatment and rehabilitation process. Post-stroke patients who demonstrate high levels of patience tend to exhibit a positive attitude toward their condition. This includes accepting their physical limitations with openness, maintaining resilience without easily giving in to despair, and sustaining a strong belief in recovery despite initial feelings of boredom with routine medical follow-ups and frustration with their condition. (14) Patience is an active initial response involving emotional restraint aimed at achieving positive outcomes. It fosters a sense of calm in resolving interpersonal conflicts and has a significant impact on psychological adjustment. (15)

Negative emotions like stress often show that post-stroke patients have not fully accepted their condition. Stress is known to be a risk factor for stroke, but it is still not given attention in everyday medical care. Stress can affect people differently—what is stressful for one person may cause severe problems like depression for another. Both stress and depression are important factors that can be changed to help prevent stroke. (16) Mindfulness meditation and other mind-body techniques have been used successfully with patients who have vascular diseases, improving their mental health. These techniques also help reduce fatigue and improve recovery in patients with brain disorders such as stroke. Some practices, like Transcendental Meditation, can lower blood pressure and improve emotional well-being, which can reduce the risk of heart attack, stroke, and death. (17) Research shows that the traditional value of *Poda Paias Rohamu* from the Batak Angkola community is

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relevant and useful for preventing secondary stroke. Body cleanliness is a behavior that emphasizes maintaining personal hygiene at all times. This value serves as a guiding principle for the Batak Angkola community to keep the body free from dirt and impurities to prevent illness. The Batak Angkola people have a traditional practice of bathing using herbal ingredients such as cloves, flowers, and betel leaves, which are boiled to produce a fragrant body scent. (14) The research findings show that the values contained in *Poda Paias Pamatangmu* can be used to help prevent secondary stroke, such as by maintaining personal hygiene and consuming healthy food and drinks. Personal hygiene is important for maintaining both physical and mental health. After a stroke, patients often experience limited mobility that makes it difficult to take care of their own hygiene, so family support is essential to help meet their hygiene needs. (18) Eating healthy food is also crucial for cardiovascular health and stroke prevention. Reducing daily calorie intake by 20 % to 25 % over three months or more can improve blood pressure, LDL cholesterol, triglycerides, insulin resistance, and blood sugar control in both obese and non-obese individuals. Consuming foods and drinks high in added sugar and with a high glycemic index increases the risk of overweight, diabetes, and coronary heart disease. (19) Changing eating habits to address these factors can reduce the risk of stroke by 40 % or more in high-risk patients. (20) A balanced nutritious diet focused on vegetables, fruits, and lean protein not only benefits blood vessel health but also has the potential to improve the quality of life for post-stroke patients. (21)

The value of clothing cleanliness means always maintaining clean and neat clothing. In the Batak Angkola culture, rules about clothing carry deep meaning. They not only focus on cleanliness but also regulate which types of clothing are appropriate based on the function or traditional activities being performed. The Batak Angkola say that *paias parabitonmu* means "take care of your clothing cleanliness." A person's character can be judged by how they dress. Therefore, the Batak community considers those who wear clean and neat clothes as distinguished individuals. *Parabiton* refers to what we wear. This means that what we use to cover our bodies should be clean to avoid disease. Clothes should be changed daily and washed properly. The research shows that *Poda Paias Parabitonmu* can guide families and stroke patients to maintain clean clothing and to wear loose, comfortable clothes. This helps stroke patients move and carry out daily activities more easily. Clothing cleanliness is very relevant as a guideline for preventing secondary stroke. Wearing clean, loose, and comfortable clothes can prevent wounds and skin infections, especially for stroke patients who are bedridden. (22) Stroke patients need to have their hygiene maintained by regularly changing clean clothes and bed sheets to keep their environment healthy. This care requires family support because stroke patients often have difficulty or are unable to perform daily activities such as dressing themselves. (23)

Research findings show that *Poda Paias Bagasmu* can serve as a guideline to help prevent secondary strokes. Maintaining the house clean includes modifying the home environment by adjusting access routes to facilitate daily activities, adapting bathrooms and bedrooms, cleaning floors to prevent them from becoming slippery, and ensuring proper ventilation to avoid indoor air pollution. These home modifications aim to create a safe and comfortable environment, reduce the risk of injury or falls, and support the recovery process. For example, installing handrails in bathrooms, bedrooms, and hallways can support stroke patients' mobility inside the home. To prevent falls, families should regularly clean floors, especially in the bathroom, where patients perform personal hygiene routines. (24)

Proper ventilation is also essential to maintain healthy indoor air. Poor ventilation can lead to indoor air pollution, which is a known risk factor for stroke. Air pollution contributes significantly to the global burden of stroke and other cerebrovascular diseases, particularly in developing and low- to middle-income countries. Air pollution has both short- and long-term effects on cerebrovascular and cardiovascular health. It is important to distinguish between indoor air pollution (such as from households or workplaces) and outdoor air pollution. Indoor pollution is more difficult to study unless in specific environments like factories or construction sites, while outdoor pollution is more commonly measured and tracked over time. (25)

Research shows that *Poda Paias Pakaranganmu* can help prevent a second stroke. Simple physical activities like cleaning the yard, planting flowers or vegetables, and spending time outdoors can benefit stroke patients. These activities help improve their mood, reduce stress, and prevent feelings of uselessness. Patients are also encouraged to socialize with people around them and continue doing things they enjoy. This helps them feel more confident and independent. Using nearby healthcare services is also important so patients can get treatment quickly and avoid further problems.⁽²⁶⁾

Regular physical activity is important to prevent stroke and improve recovery. Even light activities like walking or gardening can be helpful. Gardening, in particular, is a good therapy after stroke. It helps patients feel more in control and confident about taking care of their health. Being active can lower the risk of heart disease and death. Stroke patients often spend too much time sitting. Helping them to move safely and regularly can improve their health, encourage them to take medicine on time, and support their recovery. Regular exercise and support from others can improve their quality of life. (27) Seeking medical help means taking action when a person notices a health problem. For stroke, getting help quickly is very important to prevent death or disability. Stroke patients should use the health services near their home so they can be treated early and avoid

CONCLUSION

Research has found that the five traditional values of *Poda Na Lima* can be used as a guide to help prevent secondary stroke. These values are important to develop and apply in daily life to improve health. The first is *Paias rohamu*, which means maintaining the heart clean by being sincere, patient, and avoiding stress. The second is *Paias pamatangmu*, which means maintaining the body clean through good personal hygiene and eating healthy food and drinks. The third is *Paias parabitonmu*, which means wearing clean, loose, and comfortable clothes to help stroke patients move more easily. The fourth is *Paias bagasmu*, which means maintaining the house clean and safe, such as making the bathroom and bedroom easier to access, cleaning slippery floors, and ensuring good air ventilation. The fifth is *Paias Pakaranganmu*, which means maintaining the yard and surroundings clean, encouraging light physical activity like gardening, and using nearby health services. These local values are useful and practical in everyday life, and can help improve health and quality of life in the community.

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