



EFFECTIVENESS OF AN PHYSIOLOGICAL BASIC CARE INTERVENTION ON STROKE SURVIVORS

Kartika Setia Purdani*, Heni Aulia Tamara, Nabilah Hana'a Dwi Saputri Halsar, Winda Fitriana, Dwi Amelia Safitri, Diazty

Bachelor of Nursing, Universitas Muhammadiyah Kalimantan Timur, Jl. Ir. H. Juanda No.15, Sidodadi, Samarinda Ulu, Samarinda, Kalimantan Timur 75124, Indonesia

*ksp680@umkt.ac.id

ABSTRACT

Stroke remains a leading cause of mortality and disability in Indonesia, with high prevalence in East Kalimantan. Post-stroke patients often depend on family caregivers for daily activities, including basic care, which is frequently overlooked. Limited attention to physiological care (bath, nail, oral hygiene, hair, along with reduced mobility), may worsen patient outcomes. To evaluate the effectiveness of physiological basic care interventions in improving functional independence among stroke survivors. A pre- and post-test design was employed in this study, involving a total sampling of 89 respondents from medical records over a six-month period in the Teluk Dalam Primary Health Care, Kutai Kartanegara Regency. Data were collected between September 2025 and January 2026. All interventions education delivered to stroke caregivers. Functional independence was measured using the Barthel Index. Data were analysed using wilcoxon signed-rank test ($p < 0.05$). Result: The Wilcoxon signed-rank test indicated that was a significant increase in all interventions ($p < .001$). This study concludes that caregiver more specifict stroke's family with education was highly effective for enhances the functional independence of stroke patients. The ROM exercise was most effective, based on that empowering caregivers is a vital-strategy for long-term stroke rehabilitation.

Keywords: family-empowerment; functional-independence; stroke

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INTRODUCTION

Epidemiological studies published in 2025 further confirm that stroke remains a major cause of mortality in Indonesia. These studies report that the crude incidence rate of stroke is approximately 158.47 cases per 100,000 population, indicating persistent transmission of risk factors such as hypertension and diabetes mellitus across many provinces (Zainuddin et al., 2025). Regionally, particularly in East Kalimantan, the prevalence of stroke is recorded as being higher, reaching 14.7 per 1,000 residents, ranking highest among all Indonesian provinces. This high rate presents significant challenges, particularly in the care of post-stroke patients (Ghaniyyah Salsabila, 2024). Whereas, individual's physical and emotional wellbeing have contributed with their routine for physical activity and exercise, especially for patient with impairment disorder and who needs assistance, one of it is stroke who needs stroke caregiver (Potter A. Patricia, Perry G. Anne, Stockert A. Petricia, 2021).

Caregivers are identified a person who unpaid as those primarily responsible for aiding patients with stroke in the community and who ensuring to health quality of stroke survivors at home setting (Mehdipanah Roshanak et al., 2025). In Asia, caregivers are individuals who attending of their time providing daily care to stroke patients, usual are family members. They have fulfilled roles, include addressing physical and emotional needs post-hospital discharge, nutrition feed, hygiene, and supporting to rehabilitation exercises. Add more, the caregivers also serve as intermediaries between patients and healthcare providers (Yunding et al., 2026). However, transition role to become stroke caregivers, on some caregiver make burden. Some report such as social life

change's, poor health, uncontrolled blood pressure, and improving the mental health disorders (Jammal et al., 2025). The one burden is can't caring the stroke survivor's daily activity, in this conditions, nervous system disorders in stroke patients can lead to a loss of conscious control, resulting in limited mobility and dependence on others for basic daily needs (Nugraheni & Anita, 2025). For measure the effectiveness family role after researcher action was used Barthel index. It supports on research by Hongyan, et all in 2021 with details; stroke often leads to functional limitations that impair independence. Accurate measurement of ADL ability using tools like the Barthel Index allows clinicians to: determine the severity of disability, guide rehabilitation goals, track progress over time, and evaluate treatment effectiveness (Yang et al., 2021).

On preliminary study conducted at the Teluk Dalam Primary Health Center (Kutai Kartanegara Regency) in September 2025, patient medical records showed 89 stroke patients from 12 villages. Observations and brief interviews with caregivers indicated that 10 stroke patients and their caregivers were interviewed. The interviews revealed that most stroke patients experienced upper extremity weakness, making it difficult for them to perform daily activities. Based on explore upper, the aim for this research is to compare effectiveness physiological basis care inside nail care, bathing assistance, oral hygiene, hair care, and ROM exercise. The difference between other research caused in this research, in here is making collaboration both of stroke survivors and their caregivers.

METHOD

Design: This study employed a pre-experimental design using a one-group pretest–posttest approach to evaluate the effect of nail care, bathing assistance, oral hygiene, hair care, and Range of Motion exercises promotion education on the functional independence of stroke patients. **Sample and setting:** Using a total sampling technique, 89 stroke patients who fulfilled the inclusion and exclusion criteria were enrolled. The study was carried out in the Teluk Dalam Primary Health Care area, Kutai Kartanegara Regency, between September 2025 and January 2026. **Data collection:** Data collection fit in an Index Barthel instrument. Index Barthel based on 5-point Likert scale was adopted to provide respondents with 5-response options, i.e., 5 (independence), 4 (slight dependence), 3 (moderate dependence), 2 (severe dependency), to 1 (total dependency). **Data analysis:** Normality testing was performed using the Shapiro–Wilk test. Since the data were not normally distributed, the effectiveness of each intervention was analyzed using paired Wilcoxon Singed Range Test. **Ethical consideration:** Ethical clearance was obtained from the Health Research Ethics Commission, Faculty of Medicine, Mulawarman University, Samarinda, under approval number 241/KEPK-FK/XII/2025.

RESULT

The result consists from univariate and bivariate examines. Univariate result is shown on table 1, with detail gender, age, affected body side, and stroke duration. The second table inside of effect each intervention, whereas five interventions are giving on similar respondent, there are nail care, bathing assistance, oral hygiene care, hair care, and Range of Motion (ROM) exercise.

Table 1.

Respondent characteristics (n= 89)

Respondent characteristics		f	%
Gender	Male	45	50.6
	Female	44	49.4
Age (Years)	Median (Min-Max)	62.0 (50-85)	
Affected Body Side	Right-side Hemiparesis	40	44.9
	Left-side Hemiparesis	31	34.8
	Generalized weakness (bedrest)	18	20.3
Stroke Duration	<1years	7	7.9
	1-5 Years	49	55.1
	>5 years	33	37.1

Table upper was indicated that the most respondent is male (50.6%), whereas the group differed by only one participants. The age average from all respondent is 62 years old, with 50 years old is minimum and 85 is maximum age of respondent. Integrating with impairment side of body, the most in right side himiparesis (44.9%), and majority base on stroke duration is 1-5 years (55.1%).

Table 2.

Differences in Barthel Index Scores Before and After Physiological Care Interventions

Intervention	Pre-test Median	Post-test Median	p-value
Nail Care	10	13	<0.001
Bathing	12	13	<0.001
Oral Hygiene	12	14	<0.001
Hair Care	11	13	<0.001
ROM Exercise	12	15	<0.001

The integrated basic care intervention consisted of nail care, bathing assistance, oral hygiene care, hair care, and Range of Motion (ROM) exercises. Based on the Shapiro–Wilk test, all study variables had p-values < 0.05, indicating non-normal data distribution. Therefore, the Wilcoxon Signed Rank Test was used to analyze differences before and after intervention. Post-intervention Barthel Index scores were significantly higher compared to pre-intervention across all basic care intervention domains, indicating improved functional independence among stroke survivors.

DISCUSSION

Five interventions (integrated), are doing on 89 participants with stroke survivors' condition where they have caregivers, stay together, able to communicate effectively, the first attack, and the respondents ages ranged 45 to 90 years.

Nail care procedures

On nail care procedure, the result data show that pretest Mean is 10 compares within posttest Mean is 13, increase for 3 points. Based on that the nail care procedure is significant within family role which measure with Barthel index. Nail care is important not only for aesthetics but also for preventing skin tears, ingrown nails, infections, and discomfort, particularly in patients with sensory loss or limited mobility. Guidelines for personal care after stroke note that hands may become clenched or nails may grow into the skin if not properly managed, and recommend caregiver involvement to keep nails short, smooth, and clean to prevent injury and improve comfort (American Stroke Association, 2024). Empirical evidence in the stroke care literature supports that family caregivers often become responsible for personal hygiene tasks, including nail care, because many survivors lack the physical ability to perform these tasks independently. A qualitative study on personal hygiene experiences reported that families found challenges in meeting hygiene needs such as bathing, hair care, and nail trimming for stroke survivors, underscoring the caregiver's essential role in fulfilling these activities of daily living.

Furthermore, a caregiver competence study showed that over 80% of caregivers reported a need for more knowledge and skill in comprehensive hygiene tasks, including oral care and hygiene (such as hand and nail care), when providing home support for dependent patients (Kissal Aygul, Kurt Gonca, Koc Medine, Citil Riza, Gulpinar Serhat, 2019). Nail care is a component of routine personal hygiene for stroke survivors that often requires caregiver assistance due to physical limitations. The family's involvement in nail care contributes to prevention of complications, enhanced comfort, and overall rehabilitation support, aligning with evidence that better family support and competence in self-care tasks is associated with improved outcomes after stroke. Nail health in patients with non-communicable diseases, including stroke, represents an often-neglected aspect of personal hygiene that carries significant clinical implications. Neurological impairment, reduced mobility, and compromised circulation in stroke patients contribute to nail abnormalities and poor hygiene practices. These conditions increase the risk of infection, injury, and decreased functional ability. Although direct studies on nail care in stroke patients remain limited, evidence from related chronic conditions such as diabetes highlights the importance of structured nail care interventions in preventing complications. Therefore, integrating nail care into comprehensive

personal hygiene management for stroke patients is essential to improve overall outcomes and quality of life.

Bathing assistance

Regarding the bathing assistance, the result showed were have increased score; from 12 to 13 scores. Bathroom which some place for bathing is has reported that according place where contributed for stroke attack or stroke recurrent, but unfortunately rarely reported (Inamasu et al., 2017). When personal hygiene (bath) is neglected and clothing is rarely changed, particularly in extreme circumstances, individuals become more vulnerable to scabies and lice-transmitted diseases, moreover on stroke condition with some of impairments. Because hygienic needs differ from one person to another, nursing care should be adapted to the individual's unique practices and conditions. Hygiene behaviors are affected by multiple factors, including culture, lifestyle, body image, financial status, personal choices, and health knowledge (DeLaune C. Sue, Ladner K. Patricia, McTier Lauren, Tollefson Joanne, 2020).

Oral hygiene

The data analysis related oral hygiene practice pre and post intervention (12 become 14) an explain that oral hygiene practice is have contribution within family independent ability for daily live. Post-stroke patients often experience oral health deterioration, characterized by increased plaque accumulation, poor periodontal status, and higher prevalence of dental caries compared to healthy individuals (Dziewulska et al., 2024). This decline is further exacerbated by conditions such as dysphagia, xerostomia, and reduced salivary flow, which create an environment conducive to bacterial growth and oral infection (Huang et al., 2025). Despite its importance, oral hygiene is often neglected in stroke care settings, partly due to limited awareness, time constraints, and lack of standardized protocols among healthcare providers (Li et al., 2026). Research by Ajwani et al. describes that 75% of stroke patients have difficulty brushing their teeth and maintaining oral health. This is due to cognitive and physical impairments resulting from the stroke. Oral hygiene can be performed independently or with optimal family support. Therefore, increasing knowledge is highly recommended for families as the primary caregivers for stroke patients (Okekunle et al., 2024; Susanti Irma, Anang, 2024).

Maintaining oral hygiene in stroke survivors is critical, as poor oral care can increase the risk of aspiration pneumonia, dental caries, periodontal disease, and systemic infections without excluding stroke conditions. Minimal implementation the oral care was found in Medan, it based the research with result not right ac caregiver implementation of oral care in home, less optimal for oral hygiene in home setting, finding some obstacle to do oral hygiene in home setting, and family need education to improve ability to oral hygiene implementation (Siregar & Tanjung, 2019). Systematic evidence from clinical implementation projects shows that poor oral self care in stroke patients is common due to physical and cognitive impairments, and that improving compliance with evidence based oral care recommendations can enhance overall oral health outcomes. Although this study doesn't always isolate family involvement, it underscores that stroke survivors need assistance to maintain oral hygiene assistance often provided by caregivers (Cardoso et al., 2023). Moreover, the dependency level of stroke patients often necessitates caregiver involvement in maintaining oral hygiene. However, oral care is frequently overlooked in clinical and home settings, as it is often perceived as a secondary priority compared to other medical interventions (Uhrin et al., 2025). Therefore, oral hygiene in stroke patients should not be viewed merely as a routine nursing task, but rather as a critical component of comprehensive care, requiring structured interventions, caregiver education, and continuous monitoring to support recovery and prevent complications.

Hair care

Increased score between pre-post interventions based on hair care intervention are 11 to 13. Hygienic care consists of various practices aimed at maintaining personal cleanliness, including care of the body, hair, face, ears, oral cavity, hands, feet, and perineal area, as well as supporting self-care activities. Among these practices, bathing is considered the primary component, although

bathing habits may differ across cultures (Tunç Ismail, Tosun Betül, 2025). Hair care is part of personal hygiene that contributes to comfort, cleanliness, and psychosocial well-being (Potter A. Patricia, Perry G. Anne, Stockert A. Petricia, 2021).

ROM exercise

The analysis using a paired sample t-test showed a significant difference between the Barthel Index scores before and after Range of Motion (ROM) education was provided to families of stroke patients ($p < 0.001$). The average Barthel Index score increased from 12 to 15, indicating that ROM exercises play a role in increasing the independence of daily activities in stroke patients. The family plays a pivotal role in the recovery of post-stroke clients, particularly in facilitating the restoration and optimization of motor functions. As the primary support system, families complement the efforts of healthcare providers in managing the full spectrum of health conditions experienced by their members. The ability of families to provide effective care is underpinned by health behavior theory, which emphasizes that an individual's actions are shaped by the interplay of knowledge, attitudes, and behaviors. Despite its importance, evidence from integrative reviews indicates that awareness and understanding of stroke recognition and prevention among family caregivers remain limited, highlighting a critical gap in patient-centered care and education. One more focus action as family role is ROM exercise (Sari Citra Windani Mambang, Nofrel Vier, 2023).

Optimize ROM exercise with family caregiver support could support rehabilitation of stroke attack impairments, not only that, but also could decrease the stroke recurrent incidents. This assumes relevant with AHA recommendation, focused on post-stroke rehabilitation. Post-stroke rehabilitation must begin as early as possible, within family care more concern in home setting (Asmirajanti et al., 2026). Furthermore, determinant factors which having contribution for family role to support stroke survivors care in home setting are knowledge, attitude, self-efficacy, and social support (Puruhita Kissy Annida and Sodikin, 2024). Because of that this research with direct care and accompany in community setting is available for this case.

The Indonesian government having some policy to guideline stroke survivors and stroke caregivers' care. The first is Pedoman Nasional Pelayanan Kedokteran (PNPK) Tata Laksana Stroke is an official clinical guideline issued by the Ministry of Health of the Republic of Indonesia aimed at standardizing comprehensive stroke care across the country (Pedoman Nasional Pelayanan Kedokteran Tata Laksana Stroke, 2019). It provides evidence-based recommendations on stroke prevention, acute management, rehabilitation, and follow-up care, with the ultimate goals of reducing disability and mortality from stroke. This guideline is designed to be used by hospitals, physicians, and healthcare teams to organize care from prehospital to long-term rehabilitation, ensuring that stroke survivors receive appropriate support throughout the recovery process (Pedoman Nasional Pelayanan Kedokteran Tata Laksana Stroke, 2019). For supporting family and health cadre to optimize care in community, the online book with title **GUIDEBOOK FOR CADRES AND FAMILIES MANAGEMENT OF STROKE AT HOME** is recommended (Handayani Fitria, Widyastuti Hadi Rita, 2019).

CONCLUSION

The study demonstrates that family involvement plays a critical role in supporting stroke survivors' independence in daily activities through five key interventions. Overall, these results confirm that family caregivers are indispensable in the rehabilitation and daily care of stroke survivors, particularly for tasks that patients are unable to perform independently due to physical or cognitive impairments. Empowering families through training, education, and structured involvement directly contributes to better patient outcomes, improved self-care capacity, and enhanced quality of life.

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