The Relationship Between Lifestyle and Recurrent Stroke Prevention in Elderly Elders in The Golden Road Ciputra Hospital Inpatient Ward, Citra Garden City, West Jakarta

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ABSTRACT

Background: Stroke is one of the leading causes of disability and death in the elderly, and carries a high risk of recurrence if secondary prevention measures are not optimally implemented. Recurrent stroke can worsen the health condition of the elderly and increase the burden of long-term care. This study aims to determine the relationship between lifestyle and the prevention of recurrent stroke in the elderly at Ciputra Hospital. The research method used a quantitative analytical cross-sectional study design, in which measurements of independent and dependent variables were conducted simultaneously at the same time. The study population consisted of 30 elderly people with a history of stroke who were undergoing treatment at Ciputra Hospital, with a total sampling technique used. Data collection was conducted through a structured questionnaire to assess the respondents' lifestyle and a study of medical records to assess efforts to prevent recurrent stroke. Data analysis used the Chi-Square test with a significance level of 0.05. The results showed a significant relationship between lifestyle and the prevention of recurrent stroke in the elderly with a p-value of 0.032. In conclusion, the implementation of a healthy lifestyle needs to be continuously improved as part of a strategy to prevent recurrent stroke.

Keywords: Lifestyle; Recurrent Strok; Prevention; Elderly

INTRODUCTION

Stroke is a disease that requires serious attention as it can lead to death and permanent disability, particularly among older adults (Hartaty & Haris, 2020). Clinically, stroke is defined as a neurological disorder caused by vascular injury to the central nervous system that occurs acutely (Murphy & Werring, 2020). Stroke is not only prevalent in developed countries but also has a high incidence in developing countries, including Indonesia (Panjaitan, 2020). Globally, stroke is recorded as the second leading cause of death and a major cause of long-term disability worldwide (Murphy & Werring, 2020).

The World Health Organization (WHO) reports that approximately six million people die from stroke each year worldwide (WHO, 2022). Most stroke events occur in individuals under 70 years of age, with a significant proportion affecting the productive age group and older adults (WHO, 2022). In Indonesia, stroke prevalence has shown changing trends, decreasing from 10.9 per thousand in 2018 to 8.3 per thousand in 2023, with higher rates observed in older age groups, especially those aged ≥75 years (Ministry of Health of the Republic of Indonesia, 2023). Risk factors for stroke include an unbalanced diet, smoking habits, alcohol consumption, physical inactivity, and hypertension (Hartaty & Haris, 2020).

Recurrent stroke is defined as the occurrence of a stroke after a first stroke attack, either in the same or a different anatomical location, and can occur within ≤30 days or later (Ilmiah et al., 2020; Udiyono et al., 2019). Recurrent strokes generally have a worse prognosis than first strokes and contribute significantly to increased disability and mortality (Ekawati et al., 2022). To date, fully effective stroke treatment is unavailable, making prevention the most efficient strategy to reduce the incidence of recurrent stroke (Amila, 2019).

Several studies indicate that risk factors for recurrent stroke are largely associated with unhealthy lifestyles, such as smoking, obesity, hypertension, diabetes mellitus, dyslipidemia, medication noncompliance, and low physical activity (Yardes et al., 2022). A healthy lifestyle includes a balanced diet, regular physical activity, avoidance of smoking and alcohol consumption, and effective stress management (Dewi et al., 2022; Kariasa, 2022). Lifestyle changes in urban areas are known to contribute to the rising incidence of degenerative diseases, including stroke (Marbun, 2019). Theoretically, lifestyle is a modifiable risk factor for the prevention of recurrent vascular disease. The Health Promotion Model (Pender) and Self-Care Theory (Orem) explain that an individual's health behavior is influenced by knowledge, motivation, and self-care ability in managing chronic diseases (Murtaqib, 2020). Previous studies have shown that lifestyle modification can reduce stroke risk by 44–79% through the control of major cardiovascular risk factors (Widyaswara et al., 2019; Amila & Sinaga, 2019).

Based on a preliminary study conducted by the researcher in March 2025 at Ciputra Hospital, the number of stroke patients remained relatively high among both inpatients and outpatients. This condition indicates that stroke, particularly recurrent stroke, remains a serious health problem that affects the physical, psychological, social, and

economic aspects of patients and their families. The aim of this study is to examine the relationship between lifestyle and the prevention of recurrent stroke in older adults.

MATERIALS AND METHODS

This study used a quantitative approach with a cross-sectional analytical design to determine the relationship between lifestyle and the prevention of recurrent stroke in the elderly. The study was conducted in the inpatient ward of Golden Road Ciputra Hospital, Citra Garden City, West Jakarta, in November–December 2025. The study sample consisted of 30 elderly people using total sampling technique. Data analysis was performed using bivariate analysis with the Chi-Square test because the data were categorical, with a 95% confidence level and a significance value of 0.05. The test was performed using a 2×2 contingency table with the condition that there were no cells with a value of zero and the expected frequency was ≥5. If the conditions were not met, Fisher's Exact Test or Continuity Correction was used as an alternative test. The relationship between variables was considered significant if the p-value was <0.05.

RESULTS

Table 1 The majority of respondents were male, numbering 18 (60%), while females numbered 12 (40%). Based on education level, most respondents had a primary education, numbering 14 (46.7%), followed by secondary education, numbering 10 (33.3%), and higher education, numbering 6 (20%). In terms of the duration of stroke, the majority of respondents had suffered from stroke for 1–10 years, namely 21 people (70%), while respondents who had suffered from stroke for ≥10 years numbered 9 people (30%).

Table 1. Frequency Distribution of Respondents (n=30)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	18	60
Female	12	40
Education Level		
Primary Education	14	46.07.00
Secondary Education	10	33.03.00
Higher Education	6	20
Duration of Stroke		
1–10 Years	21	70
≥ 10 Years	9	30
Total	30	100

Table 2 Table 2 The majority of respondents had a good lifestyle, namely 13 people (43.3%) out of a total of 30 respondents. This finding shows that most respondents have adopted a relatively healthy lifestyle. The average lifestyle score was 1.81 with a standard deviation of 0.671, which indicates that the variation in the respondents' lifestyle levels was fairly homogeneous.

Table 2. Distribution of Respondents Based on Lifestyle of Elderly People in Preventing Recurrent Stroke (n = 30)

Variable	Frequency (n)	Percentage (%)	Mean	SD
Lifestyle				
Good	13	43,3		
Moderate	11	36,7	1,81	0,671
Poor	6	20		
Total	**30**	**100**		

Table 3, The majority of respondents, 13 (43.3%) out of 30 respondents, engaged in stroke prevention. This result indicates that most respondents have implemented stroke prevention efforts. The mean value of 1.84 with a standard deviation of 0.679 indicates relatively homogeneous response variation among respondents.

Table 3. Distribution of Respondents Based on Prevention of Recurrent Stroke in the Elderly (n = 30)

Variable	Frequency (n)	Percentage (%)	Mean	SD
Recurrent Stroke Prevention				
Yes	13	43,3	1,84	0,679
No	11	36,7		
Total	**30**	**100**		

Table 4 The analysis results show a significant relationship between lifestyle and prevention of recurrent stroke. Among respondents with a good lifestyle, most practiced prevention of recurrent stroke, namely 10 out of 13 respondents. Conversely, among respondents with a poor lifestyle, more did not practice prevention of recurrent stroke (4 out of 6 respondents). The p-value = 0.032 ($p < 0.05$) indicates that the relationship between lifestyle and recurrent stroke prevention is statistically significant. Thus, it can be concluded that lifestyle plays an important role in the implementation of recurrent stroke prevention, where the better the lifestyle of the respondents, the greater the tendency to take measures to prevent recurrent stroke.

Table 4. Bivariate Analysis Results

Lifestyle	Recurrent Stroke Prevention Yes n (%)	Recurrent Stroke Prevention No n (%)	Total n (%)	p-value
Good	10	3	13	
Moderate	6	5	11	0.032
Poor	2	4	6	
Total	**18**	**12**	**30**	

DISCUSSION

Based on the results of this study, the majority of respondents were male (60.0%), indicating that the incidence of stroke in the elderly is more prevalent among men. This finding aligns with recent epidemiological studies reporting that men have a higher risk of stroke compared to women, primarily due to the higher prevalence of behavioral risk factors such as smoking, alcohol consumption, and hypertension among men (Shi et al., 2021; Nguyen et al., 2023). Global studies also suggest that biological and social differences between men and women contribute to stroke susceptibility and recurrent stroke incidence (Johnson et al., 2021).

In addition to gender, respondents' educational level was dominated by primary education (46.7%). Low education has been identified as a factor contributing to limited health literacy and inadequate understanding of recurrent stroke prevention (Li et al., 2021). Research by Wang et al. (2022) indicated that stroke patients with lower educational levels tend to have lower adherence to treatment and lifestyle modifications. These findings underscore the importance of health education tailored to the cognitive abilities and educational backgrounds of elderly patients to ensure that preventive messages are effectively understood.

The majority of respondents had experienced stroke for 1–10 years (70.0%), indicating that most elderly individuals were in the mid-term post-stroke phase. This period is critical for preventing recurrent stroke, as the risk of relapse remains relatively high (O'Rourke et al., 2021). Recent longitudinal studies show that post-stroke duration affects health behavior adaptation, with patients having a longer disease duration tending to demonstrate more stable lifestyle changes compared to those in the early post-stroke phase (Nguyen et al., 2023).

The study also found that the majority of respondents had a good lifestyle (43.3%), with a mean of 1.81 and a standard deviation of 0.671. These values indicate that respondents generally exhibit a tendency toward healthy behaviors with relatively small variation between individuals. This finding is consistent with Park et al. (2022), who reported that post-stroke patients receiving continuous medical monitoring and health education were more capable of adopting healthy lifestyles, including balanced diets, regular physical activity, and adherence to medication. Feng et al. (2021) also emphasized the importance of health education in shaping healthy lifestyle behaviors in stroke patients.

Furthermore, the distribution of recurrent stroke prevention showed that the majority of respondents engaged in preventive measures (43.3%), with a mean of 1.84 and a standard deviation of 0.679. This indicates that most respondents have adopted secondary prevention behaviors with relatively low variation. These findings align with Chen et al. (2022), who reported that post-stroke patients actively participating in rehabilitation programs and routine follow-ups had higher adherence to recurrent stroke prevention. Similarly, Owolabi et al. (2021) highlighted that consistent risk factor management significantly contributed to reducing recurrent stroke incidence.

Bivariate analysis revealed a significant relationship between lifestyle and recurrent stroke prevention among the elderly ($p = 0.032$; $p < 0.05$). Respondents with a good lifestyle mostly engaged in recurrent stroke prevention, whereas those with poor lifestyle tended not to participate in preventive measures. This finding is consistent with Huang et al. (2021), who reported that lifestyle modifications, such as adopting a healthy diet, increasing physical activity, and quitting smoking, were significantly associated with a reduced risk of recurrent stroke. Lee et al. (2022) also emphasized that secondary stroke prevention requires a comprehensive approach integrating lifestyle modifications and medical therapy.

Recent international studies by Nguyen et al. (2023) indicate that a good quality lifestyle plays a crucial role in shaping stroke patients' health behaviors, particularly adherence to secondary prevention. These findings corroborate Huang et al. (2021), who reported that healthy diet, regular physical activity, and smoking cessation significantly lower the risk of recurrent stroke. Moreover, Lee et al. (2022) emphasized that secondary prevention approaches integrating lifestyle changes and medical therapy provide optimal outcomes in reducing recurrent stroke incidence. Cohort studies by Owolabi et al. (2021) also show that stroke patients who consistently manage risk factors through lifestyle changes have lower recurrence rates compared to those who do not modify health behaviors. Similar findings were reported by Chen et al. (2022), who found that patient engagement in health education and continuous rehabilitation significantly improved adherence to recurrent stroke prevention. Global studies by Feigin et al. (2021) further confirm that lifestyle-based recurrent stroke prevention is the most effective and sustainable strategy to reduce the disability burden associated with stroke worldwide.

Therefore, the results of this study further reinforce the scientific evidence that lifestyle is a key determinant in preventing recurrent stroke among the elderly. Nursing

interventions and healthcare services should focus on strengthening education, guidance, and continuous monitoring of healthy lifestyle behaviors, particularly among elderly patients with low educational levels and a history of long-term stroke.

CONCLUSIONS

The conclusion of this study shows a significant relationship between lifestyle and the prevention of recurrent stroke in the elderly, with a p-value of 0.032. Therefore, the implementation of a healthy lifestyle needs to be continuously improved as part of a strategy to prevent recurrent stroke.

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