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Characteristics of Stroke Patients in an Early Cognitive Training Intervention Group at a Regional Hospital Banda Aceh

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Abstract

Early cognitive training is one of the nursing interventions used to address post-stroke cognitive impairment, and understanding the characteristics of patients who receive this intervention is essential for planning appropriate nursing care. This study aimed to describe the sociodemographic characteristics and cognitive function of stroke patients in the intervention group who received early cognitive training. This study used a descriptive design as part of a larger quasi-experimental study with a pretest-posttest control group design, involving 35 ischemic stroke patients in the intervention group selected through consecutive sampling at a regional hospital in Banda Aceh, Indonesia. Data were collected using a demographic sheet and the Indonesian version of the Montreal Cognitive Assessment (MoCA-Ina), and were analyzed using descriptive statistics. The results

showed that the majority of respondents in the intervention group were female (57.1%), aged ≤ 80 years (54.2%), had completed senior high school (68.6%), and worked as housewives (42.9%). The mean cognitive function score before the intervention (pretest) was 21.43 (SD = 2.279), which increased to 24.97 (SD = 1.839) after the intervention (posttest). These findings indicate that the intervention group was predominantly composed of older, less formally employed female patients with limited cognitive function at baseline, and that cognitive function increased descriptively following early cognitive training. These characteristics should be considered by nurses in designing individualized, age- and gender-sensitive cognitive rehabilitation programs for stroke patients.

Keywords: Early Cognitive Training, Cognitive Function, Stroke Patients, Intervention Group, Sociodemographic Characteristics

1. Introduction

Stroke remains one of the leading causes of death and disability worldwide. The World Stroke Organization reported that stroke is the second leading cause of death globally and the third leading combined cause of death and disability, accounting for more than 160 million disability-adjusted life years (DALYs) lost annually, with the burden increasing markedly in low- and middle-income countries over the past three decades ^[1].

In Indonesia, the incidence of stroke reached 8.3 per 1,000 population in 2023, and Aceh Province recorded an even higher prevalence of 8.8 per 1,000 population compared with the national average, reflecting a substantial regional health burden ^[2].

Cognitive dysfunction is among the most common yet frequently underrecognized complications of stroke, with a reported prevalence of 76.3% in the subacute phase and 67.3% in the chronic phase ^[3]. Impaired cognitive function has a substantial impact on patients' independence and quality of life, and it may increase the risk of long-term post-stroke cognitive impairment and dementia if not identified and managed early ^[4, 5].

Early cognitive training has been shown to be a simple, low-cost, and effective nursing intervention for improving cognitive function among stroke patients, including through structured orientation, attention, memory, language, and problem-solving exercises ^[6, 7, 8]. However, the success of such interventions largely depends on tailoring the training to the sociodemographic and clinical profile of the recipients, since factors such as age, gender, educational background, and occupation may influence patients' cognitive reserve, learning capacity, and engagement with the intervention ^[9].

Although several studies have examined the effectiveness of cognitive training interventions for stroke patients, descriptions of

the sociodemographic and cognitive function characteristics specific to the intervention group receiving such training remain limited, particularly in district hospital settings in Indonesia. Understanding these baseline characteristics is important for nurses to design individualized and context-appropriate cognitive rehabilitation programs. Based on this gap, this study aimed to describe the sociodemographic characteristics and cognitive function of stroke patients in the intervention group who received early cognitive training at a regional hospital in Banda Aceh, Indonesia.

2. Methods

This study used a descriptive design and was part of a larger quasi-experimental study employing a pretest-posttest control group design. This report focuses only on the descriptive characteristics of the intervention group. The population consisted of all ischemic stroke patients treated at a regional general hospital in Banda Aceh, Indonesia. A total of 35 respondents were assigned to the intervention group using consecutive sampling, based on inclusion criteria of a confirmed diagnosis of ischemic stroke, a composmentis level of consciousness, disease onset of less than six months, and a baseline MoCA score of 18–25. Patients who were unable to complete the intervention, had aphasia, experienced communication difficulties, or had pre-existing mental illness, traumatic brain injury, Parkinson's disease, or other conditions affecting cognitive function prior to the stroke were excluded.

The intervention group received early cognitive training consisting of one session per day, lasting 15–30 minutes, for 10 consecutive days. Data were collected using a demographic data sheet (covering gender, age, educational level, and occupation) and the Indonesian version of the Montreal Cognitive Assessment (MoCA-Inda), a validated and reliable instrument for assessing cognitive function among stroke patients in Indonesia, encompassing seven domains: visuospatial/executive function, naming, memory, attention, language, abstraction, delayed recall, and orientation, with a total score ranging from 0 to 30. Cognitive function was measured before (pretest) and after (posttest) the intervention.

Data collection was conducted from April 2026 in the inpatient and outpatient units of a regional general hospital in Banda Aceh, Indonesia, after obtaining ethical approval from the hospital's research ethics committee (No. 35/ETIK-RSUDZA/2026) and written informed consent from all respondents. Data were analyzed using descriptive statistics, presented as frequencies and percentages for categorical variables, and as means, standard deviations, medians, and minimum–maximum values for cognitive function scores.

3. Results

Sociodemographic characteristics: Of the 35 respondents in the intervention group, the majority were female (57.1%), aged ≤ 80 years (54.2%), had completed senior high school (68.6%), and worked as housewives (42.9%). Complete sociodemographic characteristics of the intervention group are presented in Table 1.

Table 1: Sociodemographic characteristics of the intervention group (n = 35)

Demographic characteristics	f	%
Gender		
Male	15	42.9
Female	20	57.1
Age category		
≤ 40 years	1	2.9
≤ 60 years	15	42.9
≤ 80 years	19	54.2
Education level		
Elementary school	3	8.6
Junior high school	7	20.0
Senior high school	24	68.6
Diploma (D-IV)	1	2.9
Bachelor's degree (S-1)	0	0.0
Occupation		
Laborer	2	5.7
Housewife	15	42.9
Trader	2	5.7
Retiree	2	5.7
Farmer	3	8.6
Civil servant (PNS)	4	11.4
Private employee	7	20.0

Cognitive function: The mean cognitive function score of the intervention group before the intervention (pretest) was 21.43 (SD = 2.279; median = 21.00; range 18–26), which increased to a mean of 24.97 (SD = 1.839; median = 25.00; range 22–28) after the intervention (posttest). The descriptive distribution of cognitive function scores in the intervention group is presented in Table 2.

Table 2: Descriptive distribution of cognitive function in the intervention group (n = 35)

Variable	N	Mean (SD)	Median	Minimum	Maximum
Cognitive function (Pretest)	35	21.43 (2.279)	21.00	18	26
Cognitive function (Posttest)	35	24.97 (1.839)	25.00	22	28

4. Discussion

The findings of this study showed that the intervention group was predominantly composed of female patients, consistent with previous studies reporting a higher proportion of women among stroke patients receiving cognitive rehabilitation, possibly related to women's generally longer life expectancy and greater likelihood of surviving to receive post-stroke care [9, 10].

In terms of age, most respondents in the intervention group were categorized as older adults, which aligns with the well-established pattern that stroke incidence and post-stroke cognitive impairment increase with advancing age due to cumulative vascular risk factors and reduced cognitive reserve [3, 11]. This finding underscores the importance of designing cognitive training programs that account for the pace of learning and sensory limitations commonly experienced by older patients.

Regarding education, the majority of respondents had completed senior high school, while regarding occupation, housewives constituted the largest group. These characteristics suggest that the intervention group had a moderate level of formal education and limited engagement in paid employment, which may influence health literacy and the ability to independently practice cognitive exercises outside of supervised sessions. Previous studies have emphasized that educational attainment contributes to cognitive reserve and may affect the extent to which patients benefit from structured cognitive training [9].

Descriptively, the cognitive function of the intervention group improved from a pretest mean of 21.43 to a posttest mean of 24.97 following ten consecutive days of early cognitive training. This pattern is consistent with previous studies demonstrating that early, structured cognitive training—encompassing orientation, attention, memory, and problem-solving exercises—can enhance cognitive recovery among stroke patients [6, 7, 8]. These findings suggest that a simple, low-cost cognitive training program delivered over a short period may meaningfully benefit patients with post-stroke cognitive impairment, although the sociodemographic profile of the intervention group—namely older age, moderate education, and limited employment—should be taken into account when tailoring such interventions in clinical practice.

This study has several limitations, as it was conducted in a single hospital and focused only on the descriptive characteristics of the intervention group without statistical comparison to the control group, which may limit the generalizability of the findings.

5. Conclusions

The intervention group receiving early cognitive training was predominantly composed of female, older adult stroke patients with senior high school education and limited formal employment. Cognitive function in this group improved descriptively from pretest to posttest following ten consecutive days of early cognitive training. These sociodemographic characteristics should be considered by nurses when designing individualized and context-appropriate cognitive rehabilitation programs for stroke patients.

6. References

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