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IMPROVING THE HEALTH OF FAMILIES OF POST-STROKE PATIENTS IN COASTAL AREAS THROUGH HEALTH MANAGEMENT FOR FOOD SECURITY AND HEALTH INDEPENDENCE

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ABSTRACT Stroke is a major degenerative disease that significantly affects patients and their families, especially in coastal communities where access to health services is limited. Post-stroke patients require continuous care, while families often struggle with low health literacy, lack of skills in self-monitoring, and reduced economic productivity, which ultimately impacts household food security. This community service program was conducted in Puger Kulon Village, Jember, from April to November 2025, involving 45 families of post-stroke patients. The intervention consisted of health education on risk factors and prevention of complications, training on the use of simple monitoring tools such as sphygmomanometers, glucometers, and cholesterol sticks, free health examinations, and nutrition education focusing on local food-based dietary management. Families were provided with educational modules, leaflets, and health monitoring cards, and supported through regular home visits and simple digital surveillance to track progress. The results indicated an improvement in family knowledge, skills, and confidence in patient care, better adherence to health monitoring routines, and greater awareness of the importance of healthy eating using locally available resources. This program demonstrates that family empowerment through education, the use of simple health technologies, and promotion of food security can strengthen independence, improve patient care, and enhance the quality of life for post-stroke patients in coastal communities.

KEYWORDS: *Coastal Community; Family Empowerment; Food Security; Post-Stroke Care; Public Health Intervention.*

1. INTRODUCTION

Stroke was one of the degenerative diseases that posed a significant health and social burden, both for patients and their families. Post-stroke patients often faced mobility limitations, communication disorders, and a high level of dependency in daily activities. This condition not only

affected the patients' quality of life but also increased the psychological and economic burden on their families. These challenges became more evident in coastal areas, which generally had limited access to healthcare services, a shortage of medical personnel, and inadequate rehabilitation facilities (Rahman, 2025). In such limited circumstances, the family played a primary role as the caregiver.

Families who served as caregivers often experienced physical exhaustion, emotional stress, and financial strain due to the prolonged care required by post-stroke patients. Many of them lacked sufficient knowledge and skills in health management, particularly in maintaining proper nutrition and ensuring sustainable food security (Paryono et al., 2022). As a result, household stability, including family food security, was disrupted. These limitations highlighted the need for community-based interventions that strengthened family capacity, promoted health independence, and supported better quality of life for both patients and their families. This condition was consistent with findings from a phenomenological study in the coastal areas of Riau, which showed that limited facilities and geographical barriers required more contextual and family-based care strategies (Ahsan et al., 2023).

Community service was an appropriate approach to address these problems. Through education, training, and mentoring activities, families were enabled to strengthen their capacity in providing independent care for post-stroke patients. Such programs had proven effective in reducing caregiver stress, improving health literacy, and enhancing family care practices in communities with limited access to healthcare (Hirashiki et al., 2022). In addition, the involvement of local health cadres played an important role in strengthening the sustainability of the program, as it fostered a sense of solidarity and support at the community level in coastal areas.

Furthermore, the dimension of food security was an essential aspect that could not be separated from the health of post-stroke patients. The utilization of nutritious local food that was easily accessible in coastal areas not only supported patient recovery but also strengthened family independence in facing economic limitations. Education on local food processing served as a sustainable strategy to maintain nutritional balance while reducing dependence on less healthy instant food. Thus, community service activities that integrated family health management with the strengthening of food security were able to create a dual impact: improving the quality of patient care while simultaneously enhancing the socio-economic resilience of families in coastal communities.

2. METHOD

The participants of this community service program consisted of 45 respondents, including post-stroke patients and their families living in coastal areas. Families were selected based on their role as primary caregivers of post-stroke patients who had limited access to health services and rehabilitation facilities. Local health cadres and community health workers were also involved to support the sustainability of the program and to strengthen community participation.

The main implementation stage of this community service program was health education and training for the families of post-stroke patients. The educational activities were delivered in the form of interactive counseling on stroke, its risk factors, the importance of regular health monitoring, and healthy diets based on locally available food sources. The training was conducted through hands-on practice, where families were taught how to use simple health tools such as sphygmomanometers and glucometers to independently monitor blood pressure, blood sugar levels, and cholesterol at home. To strengthen understanding, leaflets, educational modules, and health monitoring cards were provided as daily guidance tools.

In addition to education and training, free health examinations were conducted for post-stroke patients and their families. These examinations included measurements of blood pressure, blood sugar levels, and cholesterol, the results of which were recorded in the family health monitoring card. To strengthen sustainability, the recording of examination results was complemented with a simple surveillance system using both manual and digital documentation. This data was utilized by local health workers to monitor patient conditions more systematically and to provide recommendations aligned with the patients' health progress.

The next stage of intervention was mentoring and monitoring, which were carried out through regular home visits. During these activities, families were accompanied to ensure that the skills of independent health monitoring could be applied consistently. The community service team also provided additional advice whenever challenges or specific needs were identified. Beyond the medical aspects, this intervention also integrated the dimension of food security through training on preparing healthy menus based on nutritious and affordable local coastal food ingredients. In this way, families not only became more independent in caring for post-stroke patients but were also able to maintain nutritional balance and improve their quality of life in a sustainable manner.

3. RESULT AND DISCUSSION

3.1 Results

Occupation, and educational background. These data were presented in the form of pie charts as illustrated below.

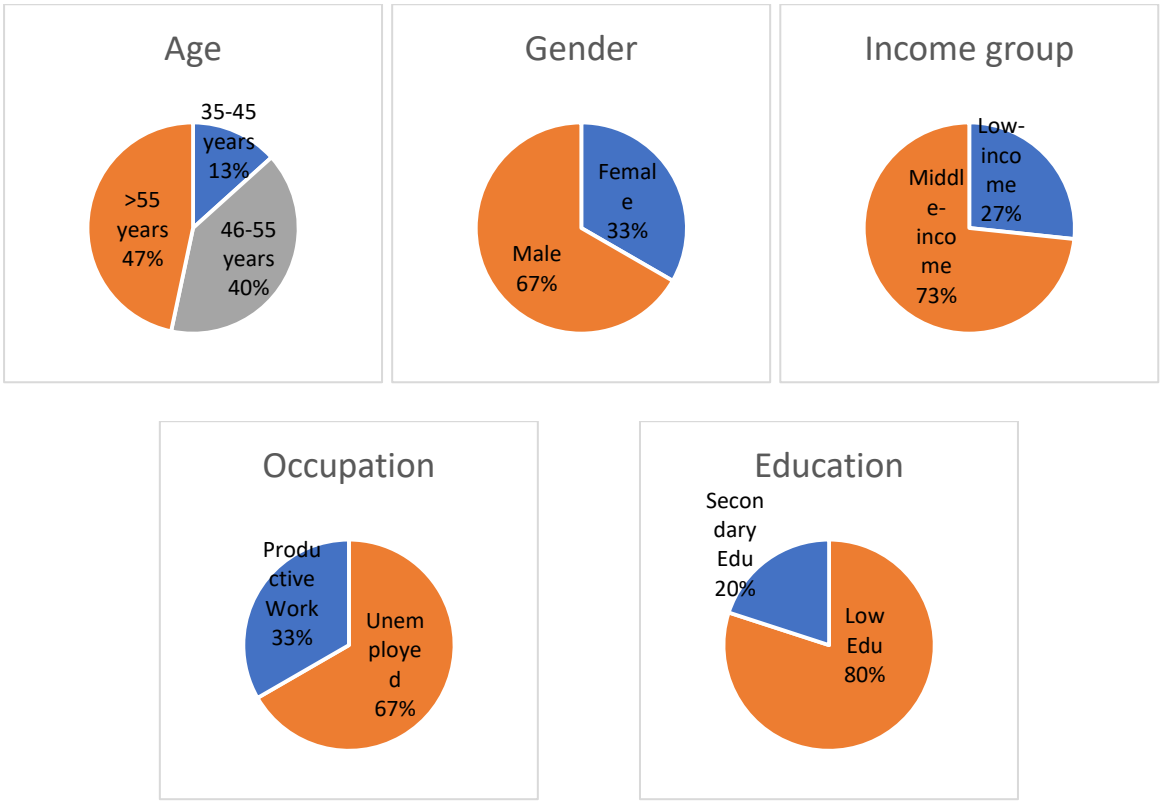

Figure 1. Socio-demographic Characteristics of Respondents

Based on the socio-demographic characteristics of the 45 respondents, the majority were aged above 55 years (47%). Most of the respondents were male (67%), and the majority belonged to the middle-income group (73%). In terms of occupation, most of the respondents were unemployed (67%). Regarding education, the majority had a low level of education, consisting of no schooling, elementary, or junior high school (80%).

Beyond socio-demographic characteristics, further analysis was carried out to assess the respondents' knowledge, attitudes, and caregiving practices, as well as family stress levels and work ability. These variables were important in understanding the overall capacity of families in providing care for post-stroke patients and the impact of caregiving on their daily lives. The pre-test results, which assessed knowledge, attitudes, caregiving practices, family stress levels, and work ability, are presented in Table 1.

Table 1. Pre-test Results of Family Caregivers of Post-Stroke Patients

Variables	Mean	n	Std. Deviation	Std. Error Mean
Knowledge_Pretest	3,2444	45	1,04785	,15620
Attitudes _Pretest	4,1333	45	,78625	,11721
Caregiving _Pretest	3,1333	45	,86865	,12949
Stress_Pretest	7,3778	45	1,26651	,18880
Work_Pretest	2,8444	45	,79646	,11873

The pre-test results of 45 respondents showed that the highest mean score was for family stress levels (M = 7.38, SD = 1.27), followed by attitudes toward caregiving (M = 4.13, SD = 0.79). Knowledge and caregiving practice scores were relatively moderate, with mean values of 3.24 (SD = 1.05) and 3.13 (SD = 0.87), respectively. Meanwhile, the lowest mean score was found in work ability (M = 2.84, SD = 0.80). After the implementation of health education, training, and mentoring, a post-test was conducted to measure changes in knowledge, attitudes, caregiving practices, family stress levels, and work ability. The post-test results are presented in the following table.

Table 2 Post-test Results of Family Caregivers of Post-Stroke Patients

Variables	Mean	n	Std. Deviation	Std. Error Mean
Knowledge_Posttest	8,0667	45	,83666	,12472
Attitudes _ Posttest	7,9333	45	,71985	,10731
Caregiving _ Posttest	7,9111	45	1,16428	,17356
Stress_ Posttest	3,9778	45	,86573	,12906
Work_ Posttest	7,8222	45	,83364	,12427

The highest mean score was found in knowledge (M = 8.07, SD = 0.84), followed by attitudes (M = 7.93, SD = 0.72), caregiving practices (M = 7.91, SD = 1.16), and work ability (M = 7.82, SD = 0.83). In contrast, the mean score for family stress levels decreased to 3.98 (SD = 0.87), indicating a reduction in caregiver stress after the intervention. To further evaluate the differences between pre-test and post-test results, statistical analyses were performed. Prior to the comparison, data normality tests were conducted to ensure the appropriateness of the statistical methods. The results of the normality test are presented in the following table.

Table 3 Test of Normality for Pre-test and Post-test Variables

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Knowledge_Pretest	,214	45	,000	,861	45	,000
Knowledge_Posttest	,245	45	,000	,786	45	,000
Attitudes _Pretest	,243	45	,000	,798	45	,000

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Attitudes _ Posttest	,248	45	,000	,808	45	,000
Caregiving _Pretest	,285	45	,000	,760	45	,000
Caregiving _ Posttest	,247	45	,000	,793	45	,000
Stress_Pretest	,239	45	,000	,799	45	,000
Stress_ Posttest	,248	45	,000	,773	45	,000
Work_Pretest	,255	45	,000	,791	45	,000
Work_ Posttest	,282	45	,000	,771	45	,000

The results of the normality test indicated that the data were not normally distributed ($p<0,05$). Therefore, statistical analysis was carried out using the Wilcoxon signed-rank test to compare the pre-test and post-test scores. The results of the Wilcoxon test are presented in the following table.

Table 4 Results of Wilcoxon Signed-Rank Test on Pre-test and Post-test Scores

	Knowledge_Pretest Knowledge_Posttest	**Attitudes _Pretest Attitudes _ Posttest**	**Caregiving _Pretest Caregiving _ Posttest**	**Stress_Pretest Stress_ Posttest**	**Work_Pretest Work_ Posttest**
Z	-5,881[b]	-5,889[b]	-5,884[b]	-5,866[c]	-5,896[b]
Asymp. Sig. (2- tailed)	,000	,000	,000	,000	,000

a. Wilcoxon Signed Ranks Test. b. Based on negative ranks..c. Based on positive ranks.

The Wilcoxon signed-rank test results showed significant differences between pre-test and post-test scores across all measured variables ($p < 0.001$). These findings indicated that the community service program was effective in increasing knowledge, attitudes, caregiving practices, and work ability while reducing family stress levels.

The intervention, which included health education, training on the use of simple self-monitoring tools such as sphygmomanometers and glucometers, and mentoring supported by basic technology, successfully enhanced the capacity of families to independently care for post-stroke patients. Improvements in knowledge and caregiving practices, together with the reduction of caregiver stress, directly reinforced the role of families as primary caregivers.

An important dimension that emerged from the program was food security as a reflection of the caregivers' economic productivity. In this context, family food security was not only understood as access to nutritious food but also extended to economic independence, which was strongly influenced by the ability of family members to continue working and being productive while serving as caregivers.

Before the intervention, many families faced challenges in maintaining economic activities due to the intensive demands of patient care. High stress levels, limited knowledge and caregiving skills, and dependency on formal health services hindered caregivers from fulfilling their economic

roles. After the intervention, however, a significant improvement was observed in work ability, with mean scores increasing from 2.84 to 7.82. This demonstrated that as psychosocial burdens decreased and skills improved, caregivers were able to re-engage in household economic activities.

This recovery of economic participation had a direct impact on family food security, as household income could again be allocated to meet basic needs, particularly access to nutritious food for stroke patients. Thus, family-based health management interventions indirectly contributed to the economic dimension of food security by restoring the caregivers' productive roles. The intervention was therefore not only clinical in nature but also strengthened household social and economic systems in vulnerable coastal communities.

Food security in families with post-stroke patients must be viewed as an inseparable dimension of health and household economic productivity. In coastal settings such as Puger Kulon Village, food security was not only determined by food availability but also by the ability of families to obtain, access, and manage nutritious food in a sustainable manner. Families caring for post-stroke patients often faced limitations of time, energy, and income, which directly threatened their capacity to maintain stable daily food supplies. For this reason, interventions aimed at strengthening the role of families as caregivers also needed to consider their implications for food security.

The family health management intervention in this program was comprehensively designed to address these challenges. By enhancing family knowledge, skills, and attitudes in independently caring for post-stroke patients, reliance on formal healthcare facilities was reduced. Families no longer needed to frequently leave work to bring patients to medical visits, as they had been equipped with home-based monitoring skills. This shift indirectly allowed family members, particularly those who had previously stopped working, to re-engage in productive economic activities.

The evaluation results confirmed that the intervention significantly improved family work ability. Prior to the intervention, the average score was 2.84, reflecting serious limitations in productivity due to the physical and emotional strain of caregiving. After the intervention, the score increased to 7.82, indicating that families were better able to balance their caregiving responsibilities with their economic roles. This improvement was critical not only for public health outcomes but also for the socio-economic resilience of households.

As work ability improved, families had greater opportunities to generate stable income. This income was essential to ensure access to healthy, nutritious food tailored to the needs of stroke patients. In better economic conditions, families were not only able to fulfill their basic needs but also became more prepared to cope with ongoing health risks. This served as an important

foundation for household-based food security, particularly in areas with limited access to external nutrition programs.

Food security in this context was also strengthened through education on the utilization of local food resources. Training provided in the program taught families how to process locally available ingredients into healthy meals for patients. This educational component served as a long-term strategy to reduce dependence on instant or high-sodium foods that could worsen post-stroke conditions. Through the combination of increased income and nutrition education, families were expected to become not only more self-reliant in health care but also more resilient in maintaining adequate nutrition for all household members.

Therefore, food security should be understood as an integrative indicator of the success of family-based interventions. Strengthening caregiver capacity did not only improve the quality of patient care but also reinforced household economic resilience, which in turn ensured stable food security. In the long term, this created a positive cycle in which effective caregiving facilitated faster patient recovery, reduced the overall family burden, and enhanced the quality of life for all household members. Such interventions could serve as a model for developing community-based health policies in vulnerable regions, particularly coastal areas.

4. CONCLUSION

This community service program effectively enhanced the capacity of families in coastal areas to care for post-stroke patients independently through health education, training, mentoring, and local food utilization. The intervention significantly improved knowledge, attitudes, caregiving practices, and work ability, while reducing family stress levels. These outcomes not only strengthened patient care but also supported household food security and socio-economic resilience, demonstrating the importance of family-based health management as an integrated strategy that can inform community-based health policies in resource-limited settings.

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CONFLICT OF INTERESTS

Declare any conflict of interests, such as any financial, professional, or personal relationships that are relevant to the submitted work. This can include the name of a funding source and a description of their role in the design of the study, data collection and analysis, writing of the article, and/or decision to submit to IJCCH; whether they serve or have previously served on IJCCH'seditorial board; and/or whether they work or have worked for an organization that may benefit from the publication of the article.

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