

Factors related to health literacy of recurrent stroke prevention among older adult stroke survivors

Chanandchidadussadee Toonsiri, Pornchai Jullamate, Harit Sianghwong and Louela Cordova Acedera

Abstract

Purpose – This correlational study conducted at Ban Phaeo Hospital, Thailand, aimed to assess the health literacy levels of 105 older adult stroke survivors from November 2021 to February 2022.

Design/methodology/approach – The study uncovered a moderate level of health literacy among participants, as indicated by a mean score of 66.85 (SD = 8.151).

Findings – Significant positive correlations were observed between health literacy and several key factors, including patient-provider relationships ($r = 0.550, p < 0.001$), social support ($r = 0.548, p < 0.001$) and perceived health status ($r = 0.484, p < 0.001$). These findings emphasize the interconnectedness of health literacy with critical elements of healthcare engagement and well-being.

Research limitations/implications – To advance stroke prevention in the older adult population, future research should focus on evaluating nurse-led interventions designed to enhance health literacy.

Social implications – Raising awareness about the influence of patient-provider relationships, social support networks and perceived health status represents the initial stride toward a successful strategy for elevating health literacy and preventing recurrent strokes in this demographic.

Originality/value – This work is entirely original, all authors listed contributed to the project and have approved the final draft for submission. This work of art has not been published or is under consideration elsewhere. This study addresses the crucial gap in the literature by uncovering moderate health literacy levels among older adult stroke survivors. It delves into the intricacies of health literacy in this population, establishing correlations with patient-provider relationships, social support and perceived health status. The study emphasizes the critical role of health literacy in healthcare engagement and well-being, advocating for nurse-led interventions to enhance health literacy and prevent recurrent strokes in older adults.

Keywords Health literacy, Older adult stroke survivors, Recurrent stroke, Gerontology nursing, Nurse-led interventions, Patient-provider relationships

Paper type Research paper

Chanandchidadussadee Toonsiri is based at the Department of Community Nursing, Faculty of Nursing, Burapha University, Chonburi, Thailand. Pornchai Jullamate is based at the Faculty of Nursing, Burapha University, Chonburi, Thailand. Harit Sianghwong is based at the Department of Gerontological Nursing, Faculty of Nursing, Burapha University, Chonburi, Thailand. Louela Cordova Acedera is based at the Faculty of Nursing, Faculty of Nursing, Burapha University, Chonburi, Thailand.

Background

The most prevalent neurological condition is cerebrovascular disease, a serious global health issue and a major factor in disability and fatalities. According to the World Stroke Organization data, in 2020, 5.5 million people die from a stroke yearly. The Ministry of Public Health through the Strategy and Planning Division 2021 estimated death rates for the years 2016 to 2018 were to be 451.39, 467.46 and 506.20 per 100,000 people. According to the study, strokes can come back after they have already happened. The [National Stroke Association \(2013\)](#) claimed in 2013 that stroke recurrence affects one in four individuals.

Tiamkao's (2011) study in 2011 revealed that 29% of stroke patients in Thailand had a recurrence in less than a year. A Neurological Institute of Thailand report revealed that one-

quarter of recurrent stroke patients were found in the years 2017–2019 (Kotalux *et al.*, 2020). It also implied that cerebrovascular disease has an increased incidence of recurrence, categorized as a severe neurological disease due to its high mortality and disability rate. It escalates further with several side effects on physical and mental complications to other illnesses such as pneumonia, urinary tract infection, pressure sores, decreased activities of daily living, stress and depression (Chang *et al.*, 2022). These symptoms emerge from untreated stroke, raising the chance of recurrence and complications that cannot be treated. Mendis (2013) in 2013 emphasized in the study that as the incidence of recurrent strokes rises, this doubles the death rate following the initial stroke and worsens disability.

In earlier research, modifiable risk factors for recurrent strokes were identified, such as lipid management, blood pressure control, blood sugar control and general healthcare (Hankey, 2020). To prevent a stroke recurrence, patients must adopt new healthy habits and have the necessary information. Cerebrovascular disease has shown an increase in recurrence incidence and has been considered a severe neurological disease with a high mortality and disability rate. This includes physical and mental complications, such as pneumonia, urinary tract infection, pressure sores, decreased activities of daily living, stress and depression.

Nutbeam (2000) defined health literacy as the knowledge, understanding and social skills determining an individual's motivation and ability to access, understand and use health information for good health outcomes by developing knowledge and understanding of health information to change attitudes as well as increasing motivation can create appropriate health behaviors in self-care. In addition, health literacy influences healthcare behaviors by producing healthy outcomes to avoid the illness's causes and to help reduce various effects related to health. Health literacy has an impact linked to the practice of healthy behaviors. Therefore, if a person has sufficient health literacy, they can practice the appropriate health behaviors [World Health Organization (WHO), 1998].

As evidenced by literature reviews, limited studies were found on health literacy and related factors to prevent recurrent stroke. Currently, health literacy in Thailand has become a new body of knowledge. Therefore, further studies are needed in this conceptual context. Therefore, the researcher aimed to explore the factors related to health literacy such as educational attainment, depression, patient-provider relationship, social support and perceived health status for recurrent stroke prevention.

Methodology

Research design, sampling and data collection procedures

This correlational study was conducted to determine the factors related to health literacy and examine the relationship between educational attainment, depression, the relationship between patients and providers, social support and perceived health status with health literacy for recurrent stroke prevention among older adult stroke survivors.

The participants were older adult people aged 60 and above who had been diagnosed with ischemic stroke and received treatment with follow-up services in the Outpatient Internal Medicine Department, at Ban Phaeo Hospital which is a public organization in Samut Sakhon Province, Thailand. One hundred five (105) older adult stroke survivors were selected using simple random sampling. All sampled stroke survivors must have complete consciousness and can communicate in Thai.

G* Power program power analysis was utilized to ascertain the sample size of this study with a type I error of 5% and a power was 0.80. An effect size of 0.27 was estimated from previous research (Khunasa *et al.*, 2020).

Research instruments

The first section of the self-administered questionnaires comprised six parts as follows: demographic characteristics of the participants, which includes gender, age, weight, height, body mass index, educational attainment, marital status, religion, occupation, personal income, residence, right to medical treatment, family history of stroke, duration and severity of stroke and co-morbidity.

The Thai Geriatric Depression Scale [TGDS-15] of Wongpakaran and Wongpakaran in 2012 was utilized to evaluate depression levels. Total scores range from 0 to 15 with the following interpretation: 0–4 indicates no depression, 5–10 indicates mild depression and 11–15 indicates severe depression. The higher score implies a higher level of depression. Cronbach's alpha coefficient in this study was 0.85.

TPS (Trust in Physician Scale) in 2017 was used to measure the degree of patient-provider relationship. Total scores range from 20 to 100 with the following interpretation: 20–74 indicates a low trust, 75–82 indicates a moderate trust and 83–100 indicates a high trust. The higher score implies an increased level of trust in the physician. Cronbach's alpha coefficient in this study was 0.77 (Phommalun *et al.*, 2017).

The social support scale in 2011 by Lortajakul *et al.* (2011) was used to measure the degree of social support. Total scores range from 0 to 24 with the following interpretation: 0–8 indicates low social support, 9–16 indicates moderate social support and 17–24 indicates high social support. The higher score implies an increased level of social support. Cronbach's alpha coefficient in this study was 0.86.

Perceived health status in 2011 by Chaisawa and Jindavong (2017) was used to measure the degree of perceived health status. Total scores range from 10 to 50 with the following interpretation: 10–23 indicates a low perceived health status, 24–37 indicates a moderate perceived health and 38–50 indicates a high perceived health status. The higher score implies an increased level of perceived health status. Cronbach's alpha coefficient in this study was 0.76.

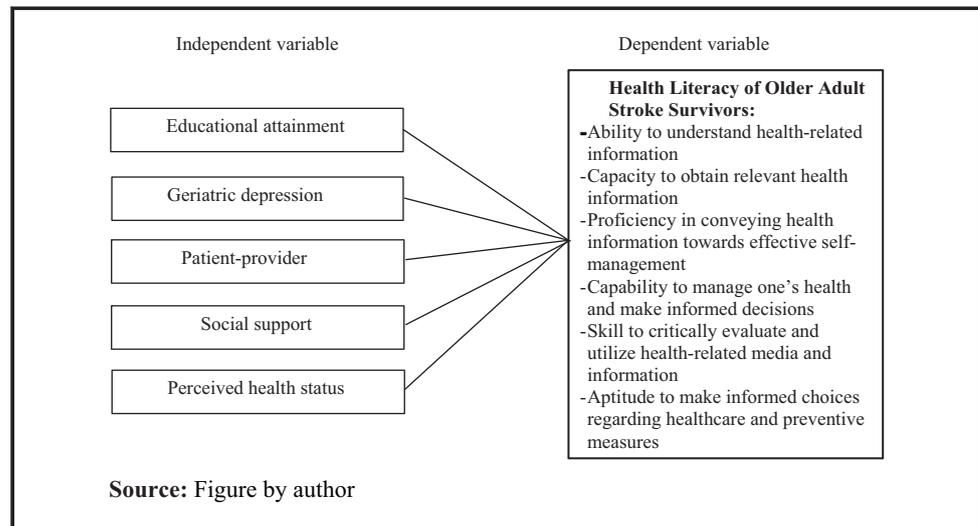
Health literacy for recurrent stroke prevention index, recently developed by researchers, was used to measure the degree of health literacy for preventing recurrent stroke. Total scores range from 20 to 92 with the following interpretation: 20–45 indicates a low health literacy, 46–73 indicates a moderate health literacy and 74–92 indicates a high health literacy. The higher score implies an increased level of health literacy. Cronbach's alpha coefficient in this study was 0.89.

Conceptual framework

This study employed Nutbeam's (2000) health literacy framework as the conceptual foundation for investigating the health literacy of older adult individuals with ischemic stroke. Nutbeam (2000) categorized health literacy into six skills, namely, the ability to understand health-related information, the capacity to obtain relevant health information, the proficiency in conveying health information toward effective self-management, the capability to manage one's health and make informed decisions, the skill to critically evaluate and utilize health-related media and information, the aptitude to make informed choices regarding health care and preventive measures.

From the perspective of health literacy and as can be gleaned in Figure 1, it is evident that there is a strong connection between health literacy and health outcomes, especially in healthcare, disease prevention and health promotion. Based on a thorough review of the existing literature, the researcher has chosen specific factors to establish a conceptual framework for this study.

Figure 1 A diagram depicting the factors related to health literacy of recurrent stroke prevention among older adult stroke survivors



Data analysis

Data were analyzed by the SPSS program application with the copyright of Burapha University. Descriptive statistics were applied to explore the demographic data based on the measures of mean, standard deviation and frequency. Pearson's product-moment correlation analysis was adopted to explore the factors related to health literacy for recurrent stroke prevention and the selected factors. The significance level was set to a type I error of 5%.

Ethical consideration

To protect human rights before conducting this study, the researcher informed the participants about the objectives of the study to make it clear that in case they felt uncomfortable participating in the survey, they could withdraw their participation anytime without consequences of any kind or loss of benefits. The participants were given informed consent for which they obtained information about the study's nature, as well as its benefits and consequences. The participants' names were not identified in the study and a code number was used instead. All participants' information was kept confidential.

Results

Demographic characteristics of the participants

As can be seen in Table 1, most of the samples' age ranges are between 60 years to 69 years (56.19%), 60 years to 82 years old and a mean age of 67.09 years old (SD = 6.117). Male samples comprise 68.57%. Sixty percent of the sample group finished primary school, 30.48% are self-employed and 95.24% of them have comorbidities. The samples' 86.00% common comorbidity is hypertension, 38.10% of them experienced stroke for 7–10 months' duration and 71.43% of them have some degree of cerebrovascular disease.

Health literacy level of elderly stroke survivors

Table 2 showed that most of the samples (75.24%) have a moderate level of health literacy (M = 66.85, SD = 8.151). The mean score of overall health literacy for recurrent stroke prevention is 66.85 (SD = 8.151).

Table 1 Demographic characteristics of the participants (*n* = 105)

Characteristics	n	%
<i>Age (year)</i>		
60–69	59	56.19
70–79	40	38.10
More than 80	6	5.71
<i>(M = 67.09, SD = 6.117, Min = 60, Max = 82)</i>		
<i>Gender</i>		
Male	72	68.57
Female	33	31.43
<i>Education</i>		
Did not attend school	3	2.86
Primary school	63	60.00
Secondary school	15	14.29
Diploma certificate	6	5.71
Bachelor's degree	16	15.24
Master's degree	2	1.90
<i>(M = 7.15, SD = 4.487, Min = 0, Max = 18)</i>		
<i>Status</i>		
Single	6	5.71
Married	79	75.24
Divorced	20	19.05
<i>Occupation</i>		
Unemployed	6	5.71
Business owner	14	13.33
Self-employed	32	30.48
Agriculturist	30	28.57
Retired from government service	23	21.91
<i>Underlying factors</i>		
No underlying disease	5	4.76
With underlying condition (More than 1 answer)	100	95.24
Hypertension	86	86.00
Heart disease	25	25.00
Diabetes mellitus	60	60.00
Dyslipidemia	45	45.00
Other	17	17.00
<i>Duration of ischemic stroke (in months)</i>		
< 3	24	22.86
3–6	29	27.62
7–12	40	38.10
> 12	12	11.42
<i>(M = 8.50, SD = 8.804, Min = 2, Max = 60)</i>		
<i>Severity of ischemic stroke (NIHSS)</i>		
Normal (0)	2	1.90
Mild (1–4)	75	71.43
Moderate (5–15)	28	26.67
<i>(M = 4.26, SD = 2.418, Min = 1, Max = 12)</i>		

Source: Table by author

Factors and health literacy for recurrent stroke prevention among older adult stroke survivors The correlation analysis in [Table 3](#) revealed that health literacy level moderately and positively correlates with the relationship between patient-provider relationship ($r = 0.550$, $p < 0.001$), social support ($r = 0.548$, $p < 0.001$) and perceived health status ($r = 0.484$, $p < 0.001$). As summarized from the collated data, education level and depression have no significant correlation with health literacy for recurrent stroke prevention.

Table 2 Health literacy level for recurrent stroke prevention ($n = 105$)

Health literacy level	Possible score	Actual score	n	%
Moderate	46–73	51–73	79	75.24
High	74–92	74–85	26	24.76

Notes: $M = 66.85$; $SD = 8.151$

Source: Table by author

Table 3 Pearson's correlation coefficient between factors and health literacy for recurrent stroke prevention among elderly adult stroke survivors

Variables	r	p-value
Patient-provider relationship	0.550	<0.001
Social support	0.548	<0.001
Perceived health status	0.484	<0.001
Educational attainment	-0.045	0.647
Depression	0.049	0.619

Source: Table by author

Discussion

This study found that most of the samples have an average score of health literacy for recurrent stroke prevention at a moderate level. Since the samples with an average age of 67.09 years ($SD = 6.117$) still have thinking ability, intelligence, perception and good memory (Miller, 2009), they can achieve functional health literacy and a good mentality as analyzed from Table 1. This finding is consistent with studies by Nutbeam (2000) and Thitimoon *et al.* (2020) that functional health literacy, good analytical thinking and moderate health literacy were found among stroke survivors significantly.

Health literacy for recurrent stroke prevention was statistically significant and moderately positively correlated with the relationship between patients and providers ($r = 0.550$, $p < 0.001$) as evidenced by the results in Table 3. In terms of the relationship between patients and providers, a moderate positive correlation was observed between health literacy and the prevention of recurrent stroke in the context of the patient-provider relationship. This relationship emerges from social roles where patients and healthcare providers share the common objective of curing or improving symptoms of diseases. To achieve these objectives, trust and a positive attitude between patients and providers are essential. When patients trust their providers, it fosters cooperation in treatment. Therefore, the patient-provider relationship plays a crucial role in treatment and healthcare (Anderson and Dedrick, 1990).

Likewise in Table 3, health literacy has a significantly positive correlation with social support ($r = 0.548$, $p < 0.001$). There was a moderate positive correlation between social support and health literacy in recurrent stroke prevention. This finding was thoroughly explained by Manganello's (2008) concept of health literacy in 2008 which stated that receiving social support from family or close individuals in numerous ways, such as assistance in activities, provision of news information, consultation and being well-taken care of, leads to knowledge exchange on various matters, including health-related information. In return, this helps individuals understand important health issues. Consequently, social support promotes and motivates individuals to take a greater interest in their healthcare, enabling them to care for themselves and practice appropriate health behaviors (Lee *et al.*, 2009). Study results of Smith *et al.* (2009) in 2009 and Fry-Bowers *et al.* (2014) in 2014 are consistent with the outcome of this study where social support is conclusively associated with health literacy.

Certainly, health literacy was significantly correlated positively with perceived health status ($r=0.484$, $p<0.001$) as exhibited in [Table 3](#). Perceived health exhibited a moderate positive correlation with health literacy in recurrent stroke prevention. Health awareness is a cognitive process that involves individuals assessing their health status. It includes being aware of the risks of disease and perceiving that neglecting self-care could lead to increased disability or death. Consequently, individuals seek knowledge, search for information and inquire about health-related matters until they gain knowledge and understanding about their healthcare. This process enables individuals to become well-versed in health. Notably, a study on health status perception and health literacy found a positive correlation between the side of perception of health status and health literacy ([Khunasa et al., 2020](#); [Deniz et al., 2018](#)).

Implications

The study filled a critical gap in the existing literature by quantifying health literacy levels among older adult stroke survivors, enhancing knowledge in gerontology and stroke prevention. It identified significant positive correlations between health literacy and key factors, offering a nuanced understanding of their role in healthcare engagement and well-being. The research guides healthcare professionals, especially nurses, in tailoring interventions to enhance health literacy among older adults. It informs policymakers about the importance of patient-provider relationships and social support in improving health literacy.

Limitations

The study's sample size of 105 participants from a specific location in Thailand may hinder the generalizability of findings to a broader population of older adult stroke survivors, especially in diverse cultural contexts. While the study identifies correlations, it does not establish causation. It is unclear whether improving health literacy directly leads to better patient-provider relationships, social support or perceived health status or if these relationships are more intricate. The research primarily focused on health literacy and its correlations with a specific set of factors, neglecting other potential variables like socioeconomic status or healthcare resource access, which might also influence recurrent stroke prevention among older adults. The study relies on self-reported data, including health literacy and perceived health status, which can introduce bias and may not consistently reflect participants' true health literacy levels or perceptions. Conducted at a single hospital in Thailand, the research may not capture regional or cultural variations in health literacy and stroke prevention practices, limiting its broader applicability.

Conclusion

The findings of this study are different from those conducted in other fields of research. For older adults, prevention of recurrent stroke significantly and positively correlated with several factors such as patient-provider relationship, social support and perceived health status. Nurses or other healthcare providers should pay more attention to these factors to better promote and prevent recurrent stroke aging among their older adult patients. Future findings can be deployed as a set of intervention guidelines for preventing recurrent strokes in older adults and improving their quality of life.

Acknowledgements

The authors want to thank the participants for their involvement in this study.

Funding source: The authors received no specific grant or financial support from any funding agency in the public, commercial or not-for-profit sectors for this article's research, authorship and/or publications.

Declaration of conflicting interest: The authors declare no conflict of interest, and no direct or indirect funding body had any role in the study's design or the data's analysis and interpretation.

Ethical approval: This study obtained ethical approval from the human research ethics board of Burapha University (3-097/2564) and Ban Phaeo Hospital (Public Organization) (011/64).

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Corresponding author

Pornchai Jullamate can be contacted at: pornchai@buu.ac.th

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