Self-care Behavior for Stroke Prevention and Associated Factors among Thais with Atrial Fibrillation: A Cross-Sectional Study

Amornrat Buranurak, Apinya Siripitayakunkit, Sumolchat Duangbubpha*

Abstract: Atrial fibrillation significantly increases the risk of stroke. Proper self-care behavior and anticoagulants are vital for stroke prevention. However, there is limited research on this topic among Thais with atrial fibrillation. This descriptive cross-sectional study examined the association among personal factors, health literacy, intention to self-care, and self-care behavior for stroke prevention in Thai people with atrial fibrillation. Ninety participants receiving anticoagulant therapy were purposively recruited at a tertiary hospital in Bangkok, Thailand. Data collection was undertaken from March to June 2021. Participants were asked to complete four questionnaires: the Self-care Behavior for Stroke Prevention Questionnaire, Health Literacy for Stroke Prevention Questionnaire, Intention to Self-care for Stroke Prevention Questionnaire, and Patient Health Data Form. Data were analyzed using descriptive statistics, Pearson's product-moment correlation, Spearman's rank correlation, and hierarchical regression analysis.

Results indicated that 74.4% of the participants were older adults with atrial fibrillation, and 96.7% had received warfarin for an average of 5.13 years. Age, educational level, comorbidities, anticoagulant duration, health literacy, and intention to self-care were significant predictors, explaining 32.8% of the variance in self-care behavior for stroke prevention, with intention to self-care being the strongest. Since the variance of self-care behavior in this study was only 32.8%, other factors, such as family support, quality of the patient-provider relationship, and care provision, should be considered in future studies to provide a more comprehensive understanding of self-care behavior for stroke prevention. Nurses can use this study to design nursing interventions promoting health literacy and the intention to self-care, thereby enhancing self-care behavior to prevent complications from atrial fibrillation.

Keywords: Anticoagulants, Atrial fibrillation, Health literacy, Intention to self-care, Self-care behavior, Stroke prevention

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Introduction

Atrial fibrillation-related stroke is likely to increase, and the prevalence of atrial fibrillation (AF) in Asia is known to be increasing due to a growing older population.[1] People with AF (PW-AF) increase their risk of embolic stroke five times compared to the general population.[1,2] For effective AF management, emphasis should be placed on optimized stroke prevention, symptom control, cardiovascular risk factors/comorbidities management, patient education/self-management, lifestyle modification, psychosocial management, strategies to promote medication adherence, and a multidisciplinary team approach.[3] Anticoagulants are the mainstream treatment for stroke prevention in AF.[3,4] Oral anticoagulants (OAC) can prevent emboli. At the same time, preventive self-care behavior is hypothesized to reduce atrial remodeling—structural and functional changes in the atrial myocytes—leading to aggravated AF.[4] Thus, PW-AF should combine OAC and self-care behavior for proper AF management.[4,5] Evidence supports that the benefit of adherence to holistic and integrated AF care could reduce ischemic stroke by 45% and lower all causes of death by 58%.[4]

In Asia, including Thailand, vitamin K antagonists (VKA) or warfarin are the most common OAC for PW-AF because they cost less than non-vitamin K antagonist anticoagulants (NOAC).[5] The anticoagulants may have drug side effects (e.g., bruising and bleeding), so AF medication side effects can negatively influence adherence.[5] Previous studies reported that Thai PW-AF adhered to warfarin, accounted for 78% to 85.8%,[6-7] and had an overall level of self-care at a good level.[8] Since AF prevalence increases with age, older people may have comorbidities along with AF, and personal factors may influence the ability to engage in self-care.[9-10] In addition, due to a wide variation of AF symptoms, some PW-AF are unaware of having AF,[5,11-12] and some feel psychological burdens (fear and anxiety),[13] that may influence their intention to self-care and may become inactive involved in self-care activities. Contrastingly, few PW-AF perceived that they lacked necessary information about AF, had problems with medical terminology, and needed more time to absorb and understand new knowledge about AF.[14] This reflects they had the degree to which health literacy limitations may impede self-care for stroke prevention.[15] Therefore, multifactor interplayed with AF burden and severity. However, few studies have been done in Thailand in PW-AF. Thus, a study on self-care behavior for stroke prevention and associated factors in Thai PW-AF was needed. The findings would guide the development of interventions to promote self-care for stroke prevention.

Literature Review and Conceptual Framework

The World Health Organization (WHO) defines self-care as "the ability of persons, families, and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of a healthcare provider."[16(p.1)] Orem and colleagues[10] pointed out that self-care is an intentional behavior; thus, for individuals to perform self-care effectively, they must have self-care abilities (e.g., reading, writing, understanding), specific abilities to engage in self-care (e.g., knowledge, skills, the abilities to reason and to decide) and to perform self-care actions and determine their effects and results for meeting self-care needs. This self-care ability is similar to the concept of health literacy (HL) as proposed by WHO.[17] HL represents "the personal knowledge and competencies mediated by the organizational structure and availability of resources that enable an individual to access, understand, appraise, and use health information and services to promote and maintain good health and well-being."[17(p.6-7)] Nutbeam[18] categorized HL into three levels: 1) basic/functional HL refers to basic skills to read, write, and understand medication and its usage and learning ability, so these skills help obtain relevant health information; 2) communicative/interactive HL is the higher-order

skills related to cognition that has to be used together with social skills, enabling individuals to understand information that can be processed and utilized to suit different situations, and the ability to use logic, reasoning, and decision-making skills to carry out actions, and cognitive skills to establish relationships with others to modify self-care behavior; and 3) critical HL is the complex skills that enable individuals to appropriately analyze, categorize, and utilize information to cover both normal and changing situations. HL can be improved through substantive education and the required specialized skills.[18]

PW-AF should have sufficient HL to determine specific behavior and prevent OAC complications. Still, evidence reveals that PW-AF have less HL; for example, 57.1% did not understand the reason for taking OAC, 42.9% did not understand OAC actions, 28.6% could indicate only one OAC complication, and only 16.7% could describe three OAC complications.[19] Furthermore, older PW-AF have limited HL and suboptimal OAC adherence,[15] and low HL linked with poorer communication skills and are less likely to adhere to healthy self-care behavior.[20] In Thailand, studies on general HL[21] and digital HL[7-8] could not predict warfarin adherence in Thai PW-AF since no specific HL measure focused on OAC treatment.[22] This is congruent with the fact that there are no specific studies in Thailand on HL and self-care behavior for stroke prevention in PW-AF.

Performing self-care behavior requires substantive knowledge of AF, that appraisal of practicing self-care behavior for stroke prevention is a good action, and decisions about engagement in self-care behavior for the rest of their life; it is not pleasurable that sometimes PW-AF feels discomfort and hardship. Intention is crucial, particularly when individuals suffer from chronic illnesses, because intention is operational in all self-care stages.[23] Intention to self-care is one of the personal factors necessary for individuals to have certain behaviors to accomplish their goal in self-care actions to respond to self-care demands.[23] Self-care practices for PW-AF include smoking cessation, physical activity, a healthy diet, reducing/withdrawing alcohol consumption, and controlling blood pressure, body mass index, lipid profiles, and blood glucose can reduce stroke risk and AF-related stroke.[5,24] Previous studies found that intention is the proximal factor for self-care.[25-26]

In conclusion, from previous studies, factors associated with self-care behavior for stroke prevention are HL and intention to self-care. Orem and colleagues also proposed that various basic conditioning factors may affect self-care needs, abilities, and behavior.[10] In this study, personal factors, including age, education level, comorbidities, and duration of OAC received, were selected to predict self-care behavior for stroke prevention. Understanding the basic conditioning factors of PW-AF is essential because most PW-AF live with AF conditions for a long time and are treated with OAC. Risk factors contributing to AF often co-exist; the impact of individual risk factors varies by patient factors, so we need to identify the personal factors that are essential for stroke prevention in PW-AF.[1,5]

Study Aims

This study aimed to 1) explore the relationships among personal factors (age, education level, comorbidities, duration of OAC received), health literacy, intention to self-care, and self-care behavior for stroke prevention in PW-AF, and 2) determine the predictability of age, education level, comorbidities, duration of OAC received, health literacy, and intention to self-care on self-care behavior for stroke prevention in PW-AF.

Methods

Study Design: A cross-sectional study was used. This report followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Checklist[27] of items that should be included in reports of cross-sectional studies.

Sample and Setting: The participants were PW-AF from a medical outpatient department of a tertiary hospital in Bangkok, Thailand. They were purposively recruited following the inclusion criteria: 1) Thai people diagnosed with AF for at least one year and taking OAC; 2) at least 40 years and over. Those who were older than 60 years old must pass the cognitive screening with the Thai 6-item Cognitive Impairment Test (6CIT),[28] and not have any dependency in self-care by a test with the Thai Barthel Activities of Daily Living Index (Barthel ADL Index)[29]; and 3) able to communicate and understand in Thai. Those who had a stroke before enrollment or had a medical history of mental health problems that interfered with self-care were excluded.

In the research setting, PW-AF who undertook OAC received knowledge of AF and OAC, OAC action, drug interactions with OAC, and dietary intake and were given a booklet. Nurses and pharmacists were taught how to observe bleeding that may occur after OAC administration. The duration of the instruction session each time was 5-10 minutes.

The sample size was determined using Green's recommendation of the rule of thumb to determine regression sample size, $N \geq 50 + 8m$ (m is the number of independent variables).[30] Six independent variables were utilized to calculate the sample size, and 98 participants were required for this study.

Ethical Considerations: The study was approved by the Institutional Review Board (IRB) for Research Involving Human Subjects of the Faculty of Medicine Ramathibodi Hospital, Mahidol University, with the approval code COA. MURA2020/1874, and the IRB for Research Involving Human Subjects of the studied hospital in Bangkok, with the approval code AC64028. Participants were informed about the research objectives, the benefits and risks of the study, and data collection procedures and then asked to sign a consent form. Human rights were protected, including confidentiality and the right to withdraw from the study without consequence. The data were stored in password-protected files; only the research team could access them. The data are presented anonymously and used only for research purposes.

Instruments: The instruments were divided into two sets. Firstly, instruments for screening older people with AF were the Thai 6CIT[28] and the Thai Barthel ADL Index.[29] The primary investigator (PI) had obtained permission to use both screening instruments from the original authors and the translators of the Thai version. Brooke and Bullock developed the 6CIT.[31] It tests calculation, short-term memory, long-term memory, environmental perception, perception of current events, and recollection. It was translated into Thai by Aree-Ue and Youngcharoen.[28] The 6CIT Thai version showed good test-retest reliability ($r = 0.64$) and a content validity index (CVI) equal to 1. Six items were in the test, and the total scores equal to 7 points or lower indicated normal cognition. In addition, the Barthel ADL Index was developed by Mahoney and Barthel.[32] The instrument is used to screen an older person's ability to perform daily living activities, e.g., self-transportation, walking, washing the face, using the toilet, urinating, defecating, bathing, eating, putting on clothes, and walking downstairs within 24-48 hours. Jitapunkul et al. translated it into Thai.[29] The Thai version had a good test-retest reliability of > 0.90.[33] Scores of 12 points or higher reflect an excellent ability to do activities of daily living without dependence on others.

Secondly, the data collection instruments included:

The Patient Health Data Form, which the researchers developed, is composed of the demographic and clinical characteristics of the participants. It consists of gender, age (number of years), education level (number of education years), duration of diagnosis of atrial fibrillation, comorbidities (no and have more than one comorbidity), duration of OAC received (number of years), alcohol drinking, and smoking status. The clinical characteristics collected were, for example, blood pressure, body mass index, albumin level,

anticoagulants used, adverse effects from OAC taking, and management. Clinical data were gathered from hospital records by the PI.

The Health Literacy for Stroke Prevention Questionnaire (HL for Stroke Prevention) comprises 25 items developed by the research team based on the concept of HL of Nutbeam.[18] The items in the questionnaire are specific to HL with AF-related stroke prevention. It is divided into three domains: 1) basic/functional HL, which has seven items representing an individual's basic skills to obtain relevant health information (e.g., *"You check the OAC dose by reading the label on the medicine packet every time because the dosage may vary daily")*; 2) communicative/interactive HL comprises 11 items measuring the individual's abilities in searching health information (e.g., *"You search for information about the severity of stroke events that need hospitalization");* and 3) critical HL, which includes seven items, including an appraisal of health information about risks and benefits before undertaking self-care actions/practices (e.g., *"You decide to visit the emergency department within four hours if you suddenly experience stroke symptoms such as speech problems or hemiparesis").* Scoring ranges from 1, "Disagree," to 4, "Strongly agree." The possible total scores range from 25 to 100 points, with a higher score indicating higher HL. The cut-off point for adequate HL is determined using the equivalent cut-off point to the standard instrument ≥ 70-100.[34] The HL-stroke prevention was validated by three experts in the first draft of the questionnaire, which suggested that some concepts of HL needed to be included, such as the communicative HL, which needs to be more specific to stroke prevention, and some items were redundant. The first CVI was equal to 0.64. We revised the content and items and returned the questionnaire to the three content experts. The CVI of the questionnaire was 0.79. After IRB approval, the pilot study tested the instrument with 30 PW-AF, and Cronbach's alpha coefficients for the pilot study and the main study were equal to 0.82 and 0.80, respectively.

The Intention to Self-care for Stroke Prevention Questionnaire (I-SC for Stroke Prevention) was developed by the research team based on Orem's nursing theory to elicit the participants' intention to self-care and literature related to AF management. There are 15 items in the questionnaire, divided into three domains: 1) control of risk factors and adherence to the treatment plan (six items), 2) symptom evaluation and self-care (three items), and 3) self-care behavior for stroke prevention (six items). For example, *"You take the prescribed OAC on time and in the correct dosage."* The score for each item ranges from 0, "No intention at all," to 10, "Strong intention." The possible scores range from 0 to 150 points, with higher scores indicating a higher overall intention to self-care for stroke prevention. There was no literature related to the cut-off point of intention, so we used ≥ 80 to reflect high intention based on the literature review of medication adherence.[21] The same experts validated this instrument. The CVI of the questionnaire in this study was equal to 0.98. Cronbach's alpha reliability for the pilot study was 0.63, and the main study was equal to 0.63.

The Self-care Behavior for Stroke Prevention Questionnaire (SCB for stroke prevention) was developed by the research team based on related literature and research. It is composed of 14 items and assessed three domains: 1) control of risk factors and adherence to the treatment plan (four items), 2) symptom evaluation and self-care behavior (two items), and 3) lifestyle modification (eight items). An item example is, *"How often do you observe OAC complications (ecchymosis, bleeding from the gum, hematuria/melena)?"* The score for each item ranges from 1, "Never done/rarely done," to 4, "Always done." The total possible scores range from 14 to 56 points, with higher scores reflecting a higher overall self-care behavior for stroke prevention. Self-care is considered adequate if it falls within ≥ 70. This cut-off point is equivalent to the standard measurement of the Self-Care of Heart Failure Index.[35] The same experts validated this instrument. The CVI of the questionnaire was equal to 0.93. After IRB

approval, the pilot study was done with 30 PW-AF, and Cronbach's alpha coefficients for the pilot study and the main study were 0.70 and 0.64, respectively.

Data Collection: Data were collected after IRB approval from March to June 2021. Nurses in a medical outpatient clinic assisted the PI in accessing PW-AF, who were followed up at a warfarin clinic. The participants were asked to complete 1) the SCB for stroke prevention questionnaire, 2) the HL for stroke prevention questionnaire, 3) the I-SC for stroke prevention questionnaire, and 4) the Patient Health Data Form. The data collection lasted 20 to 30 minutes per participant, and three participants took part in the data collection each day.

Data Analysis: The data were analyzed using a statistical software program. Descriptive statistics were used to describe the demographic and clinical data and the study variables' scores. Pearson's product-moment correlation was run to assess the strength and direction of age, duration of OAC received, HL, intention to self-care, and self-care behavior for stroke prevention. Spearman's rank correlation was run to assess the strength and direction of education level, comorbidities, and self-care behavior in stroke prevention. Correlation coefficients (r) between 0.10 and 0.29, 0.30 and 0.49, and 0.50 and 1.00 indicate small, moderate, and large strengths of association, respectively.[36] Finally, a hierarchical multiple regression analysis was used to explore the associations among personal factors (age, education level, comorbidities, duration of OAC received), HL for stroke prevention, intention to self-care, and self-care behavior for stroke prevention in PW-AF. The personal factors that may confound the results were entered first, followed by HL and intention to self-care and self-care behavior for stroke prevention. According to this study's sample size, many potential participants refused to participate, so the sample size was insufficient for regression analysis. The insufficient sample size caused the sample not to represent the population fully and is prone to developing the type 1 error; hence, the bootstrap technique is recommended for the data analysis to ensure statistical accuracy.[37] In this study, the bootstrap of 1,000 was employed by resampling from an original dataset.

Results

Participants characteristics

A total of 120 PW-AF were approached to participate. Seven out of 77 older participants failed the cognition screening test, and three failed the test of self-independence, so ten older participants were excluded. In addition, 20 of 43 adults with AF refused to participate; the reasons were no time, being in a hurry to return to work, going back home, or going to other provinces. Of those who refused to participate were 13 males and seven females between 49 and 59 years old. Therefore, the final participants were 90, with 23 adults and 67 older adults. The participants' characteristics and control of AF-related risk factors are shown in **Table 1**. Most participants were male (58.9%), and 74.4% were older adults with a mean age of 66.76. Of the total sample, 22.2% were adults who graduated with a diploma and a master's degree.

Table 1. Demographic and clinical characteristics of the study participants (N = 90)

Characteristics	Frequency	Percentage
Male	53	58.90
Female	37	41.10
Age (years), Range 40-89, Mean = 66.76, SD = 10.76		
40-59	23	25.56
60-89	67	74.44

Table 1. Demographic and clinical characteristics of the study participants (N = 90) (Cont.)

Characteristics	Frequency	Percentage
Education level (years) Range 0-18, M = 8.44, SD = 5.05, Mode = 4.00, Median = 6.50		
No school	2	2.22
Elementary to high school	68	75.56
Diploma to master's degree	20	22.22
Occupation		
Employed	68	75.56
Unemployed	22	24.44
Time of diagnosis with atrial fibrillation (years), Range 1-24, Mean = 5.01, SD = 4.20		
Time of receiving oral anticoadulants (years), Range 1-24, Mean 5.13, SD = 4.17		
Received advice about oral anticoagulants	85	94.40
Comorbidity [1]		
No	2	2.22
Yes	88	97.78
Hypertension	69	76.70
Acute coronary syndrome and related conditions	54	60.00
Dyslipidemia	38	42.20
Diabetes mellitus	36	40.00
Valvular heart disease	36	40.00
Renal disease	20	22.20
Gout	9	10.00
Thyroid disease	8	6.70
Liver disease	4	4.40
Current drinking	5	5.60
Current smoking	4	4.40
Experience in herbal use	23	25.60
Oral anticoagulants		
Warfarin	87	96.70
NOAC/DOAC[2]	3	3.30
Adverse effects related to oral anticoagulant used[3]	47	47.78
Bleeding per gum, conjunctiva, urine, nose, ecchymosis	47	52.20
Subarachnoid hemorrhage	3	3.30
Self-management when having any bleeding by patients' perceptions[3]		
Waiting for the appointment date or observe bleeding at home	38	42.20
Meeting the doctor before the follow-up date	10	20.00
Coming to the emergency department	4	4.40
Consulting with health care provider	2	2.22
Blood pressure ≤ 140/90 mmHg (N = 69)	39	56.53

Table 1. Demographic and clinical characteristics of the study participants (N = 90) (Cont.)

Characteristics	Frequency	Percentage
Body mass index (kg/m^2), Range 16.24-50.31, Mean = 26.75, SD = 5.42		
≤ 25	31	34.45
> 25	59	65.55
Albumin level (g/dL), Range 2.90-5.00, Mean = 3.98, SD = 0.53 (N = 73)		
≥ 3.5	59	80.80
< 3.5	14	19.20
INR,[4] Range 1.00-5.32, Mean = 2.30, SD = 0.72 (N = 88)		
Within target (2.0-3.0)	43	48.86
Lower than the target (< 2.0)	33	37.50
Prolong INR (> 3.0)	12	13.64
Glycated hemoglobin A1C (%), Range 4.0-14.0, Mean = 6.46, SD = 1.58 (N = 58)		
≤ 7	46	79.31
> 7	12	20.69
Cholesterol level (mg/dL), Range 84-259, Mean = 159.94, SD = 39.60 (N = 79)		
< 200	66	83.54
≥ 200	13	16.46
LDL[5] cholesterol level (mg/dL), Range 35-356, Mean = 95.87, SD = 43.47 (N =82)		
≤ 70	23	28.05
> 70	59	71.95
HDL[6] cholesterol level (mg/dL), Range 27-109, M = 47.76, SD = 14.05 (N = 79)		
Female (N = 30), Range 28-49, Mean = 38.53, SD = 7.64		
< 50	17	21.52
≥ 50	13	16.45
Male (N = 49), Range 27-39, Mean = 33.31, SD = 3.83		
< 40	13	16.45
≥ 40	36	45.58
Triglyceride level (mg/dL) Range 13-478, Mean = 128.63, SD = 84.25 (N = 80)		
≤ 150	57	71.25
> 150	23	28.75

Note. [1] = One person had more than 1 comorbidity, [2] = non-vitamin K antagonist oral anticoagulants (NOACs)/ direct oral anticoagulants (DOACs), [3] = One person chose more than one item, [4] = international normalized ratio, [5] = low-density lipoproteins, [6] = high-density lipoproteins

As shown in **Table 2**, the overall HL mean score for stroke prevention had an adequate level, but the mean score of communication HL had a lower level than the other two HL subscales. The overall scores of intentions to self-care of PW-AF and the mean score for self-care for stroke prevention were considered high levels. Correlation coefficients among studied variables are shown in **Table 3**. The result indicated that intention to self-care had a large association with self-care behavior for stroke prevention and was

positively correlated with self-care for stroke prevention ($r = 0.506$, $p < 0.001$). Comorbidities had a small strength association and were significantly negatively correlated with self-care for stroke prevention, while education level had negatively non-significantly with self-care for stroke prevention. HL for stroke prevention had small strengths of association and significantly positively correlated with self-care for stroke prevention. In addition, education levels were revealed to be significantly positively related to HL ($r = 0.428$, $p < 0.001$), and HL had positively correlated with intention to self-care ($r = 0.293$, $p < 0.001$). In contrast, education level had a small strength association and were negatively significant with age and HL.

Table 2. The scores of the study variables (N = 90)

Variables	Possible range	Actual range	Mean	Std	*Mean%	Interpretation
Health literacy (HL)	25-100	44-97	71.58	11.01	71.58	Adequate
Critical thinking HL	7-28	14-28	22.92	3.67	81.86	Adequate
Basic HL	7-28	7-28	19.92	3.69	71.14	Adequate
Communication HL	11-44	18-44	28.74	6.25	65.32	Inadequate
Intention to self-care	0-150	112-150	138.0	8.91	92.00	High
Symptom evaluation	0-30	14-30	27.97	3.25	93.23	High
Control of risk factors and adherence	0-60	38-60	55.76	4.25	92.93	High
Lifestyle modification	0-60	37-60	54.30	4.77	90.50	High
Self-care behavior	14-56	38-56	50.27	3.76	89.76	High
Symptom evaluation	1-8	4-8	7.70	0.89	96.25	High
Control of risk factors and adherence	1-16	8-16	14.67	1.42	91.68	High
Lifestyle modification	1-32	19-32	27.90	2.67	87.17	High

Note. *Mean% = adjusted scores for total score to be 100

Table 3. Relationships among age, education level, comorbidities, duration of OAC received, health literacy, intention to self-care, and self-care behavior for stroke prevention (N = 90, Bootstrapping = 1000 bootstrap samples)

Variables	Mean	SD	SC	Age	Educ	Comorbid	OAC	HL	Intention
SC	50.277	3.762	1.000						
Age	66.760	10.769	0.135	1.000					
Educ	8.440	5.046	-0.050[1]	-0.273[1]**	1.000				
Comorbid	-	-	-0.216[1]*	0.053[1]	-0.099[1]	1.000			
OAC	5.130	4.178	-0.053	-0.115	0.028[1]	0.150[1]	1.000		
HL	71.588	11.011	0.207*	-0.328**	0.470[1]**	-0.083[1]	-0.079	1.000	
Intention	138.044	8.917	0.506**	0.104	0.145[1]	-0.177[1]	-0.146	0.293*	1.000

Note: **$p < 0.001$, *$p < 0.05$, [1] = result from Spearman's rank correlation, SD = standard deviation, SC = self-care for stroke prevention, Educ= education level, Comorbid = comorbidities, OAC = duration of oral anticoagulant received, HL = health literacy for stroke prevention, Intention = intention to self-care

Hierarchical multiple regression was conducted to determine associated factors to predict self-care for stroke prevention. The model accounted for 32.8% of the variance in self-care for stroke prevention. A summary of the regression model is presented in **Table 4.** The result indicates that the four predictors (education level, comorbidities, HL, and intention to self-care) significantly contributed to the model ($R^2 = 0.328$, $R^2_{adj} = 0.279$, $F(1,83) = 6.748$, $p < 0.001$), with intention to self-care was the strongest predictor ($\beta = 0.452$, $p < 0.001$). However, the age and duration of OAC received did not predict self-care for stroke prevention.

Table 4. Multiple regression analysis to predict self-care behavior for stroke prevention (N = 90, Bootstrapping = 1000 bootstrap samples)

Predictors	b	Bias	Std Error	β	p-value*	95% Confidence interval (Lower-Upper)	
(Constant)	20.336	-0.0122	6.576		0.005	6.013	32.636
1. Age	0.042	-0.003	0.032	0.119	0.179	-0.027	0.098
2. Educational level	-0.169	-0.009	0.073	-0.227	0.034	-0.326	-0.034
3. Comorbidities**	-3.187	-0.103	1.159	-0.126	0.007	-5.630	-0.901
3. Duration of OAC used	0.061	0.020	0.105	0.067	0.571	-0.090	0.315
4. Health literacy	0.071	-0.001	0.035	0.207	0.042	-0.006	0.140
5. Intention to self-care	0.191	0.003	0.052	0.452	0.001	0.088	0.293

$R = 0.573$, $R^2 = 0.328$, R^2 Adjusted = 0.279, Std error = 3.194, R^2 change = 0.174, $F(1,83) = 6.748$, $p < 0.001$

Note. b = unstandardized coefficients, β = standardized coefficients, *2-tailed test, **comorbidities (0 = No, 1 = Yes), std error = standard error, OAC = oral anticoagulant

Discussion

Findings from our study demonstrated that the demographic and clinical characteristics of the participants in this study were congruent with the studies in Western countries and Thailand that found that AF is more common in males, the prevalence of AF is increasing with age groups, and comorbidities constitute risk factors for AF, with hypertension being the most common comorbidity.[4,5,21]

Our study demonstrated that comorbidities negatively predicted self-care behavior for stroke prevention. Due to more self-care needs and comorbidities, PW-AF may be unable to engage in self-care practices. This is consistent with a previous study, which reported comorbidities associated with poor heart failure self-care.[38] On the other hand, the age and duration of OAC received could not predict self-care behavior for stroke prevention. A possible explanation could be that two-thirds of the participants were young older adults with good cognition and physical independence, had taken the same OAC dosage for an average of 5.13 years, and regularly received specialized knowledge on self-care behavior for stroke prevention from nurses and pharmacists. Therefore, these activities could enhance an individual's self-care abilities and behavior. This notion was congruent with the premise of self-care theory, which states that an individual requires continuous, deliberate inputs to himself to remain alive and function.[10(p.140)]

Besides, HL in this study significantly positively predicted self-care behavior for stroke prevention. The reason was that PW-AF had adequate overall HL, so PW-AF had sufficient HL and could continuously perform self-care behavior for stroke prevention. This finding was congruent with the evidence of a previous study, which reported that HL predicts self-care practices in PW-chronic conditions.[39] In contrast, the result was

inconsistent with previous studies, which found that general HL[21] and digital HL[7-8] measures could not predict medication adherence in PW-AF. Generic literacy skills do not ensure a person can consistently utilize them in situations involving specific content knowledge or new settings.[18] Thus, the result in this study differed from previous studies due to the specific HL designed for PW-AF.

It was noted that the study's communication HL scores for stroke prevention were inadequate. This finding is consistent with previous studies that older PW-AF may have had poorer communication skills,[20] were more likely to follow the instructions,[21] rely on their children,[21] or depend on the expertise of a doctor.[21] Also, cultural norms in the Eastern context may influence an individual's perception, impacting how they perceive and report health problems, communicate with healthcare providers, and pursue self-care.[40] Facilitating people to establish communication (interactive) and critical HL requires promoting transferable skills (shared decision-making and autonomy).[18]

In this study, PW-AF intended to engage in self-care at a high level, and the intention to self-care positively predicted self-care behavior for stroke prevention. This finding is consistent with Orem's self-care theory in that intention to self-care is related to the search for goals of action, prioritization of action, and ability to perform goal-oriented action with long-term commitment.[23] Additionally, this result is consistent with a study that found that intention had a significantly positive relationship with self-care behavior in monks with coronary heart disease.[26] The finding in this study evidenced that almost half of the participants could control their comorbidities and risk factors. Still, they had to improve their self-care behavior for stroke prevention. Evidence suggests optimal blood pressure control is recommended for reducing stroke risk and AF recurrences [Class I, Level of Evidence (LOE) B].[24] A healthy lifestyle, e.g., physical activity, weight control, alcohol quitting, smoking cessation, and a healthy diet are recommended to reduce AF burden and symptom severity [Class I, LOE B].[24]

The findings revealed favorable associations between education level, comorbidities, HL, and intention to self-care on self-care behavior for stroke prevention, explaining 32.8% of the variance. However, the age and duration of OAC received were not associated with self-care behavior for stroke prevention. The findings yielded partial support for Orem's self-care theory,[10] which posits that for individuals to perform self-care, they need to have self-care abilities, which signifies their self-care potential. Combined with the intention to self-care, they will develop self-care behavior.

Limitations

This study has some limitations. Firstly, it was designed as a cross-sectional study. It was impossible to infer a causal relationship between the variables of interest. Secondly, the study had many adult participants who refused to participate, so we could not identify their self-care behavior, which may be prone to a selection bias of the study sample. Thirdly, the researchers developed all instruments that showed promise for use in practice, but some new instruments have low reliabilities. Thus, further refining and testing are needed. At best, enhancing the generalizability to a broad context could have been achieved by expanding the study to other settings (rural areas) that may have an additional understanding of HL or investigating other factors (e.g., family support, resource availability) that should be explored.

Conclusions and Implications for Nursing Practice

This study advances the understanding of self-care behavior and its association factors among PW-AF. Self-care for stroke prevention requires simultaneous use of individuals' self-care abilities or HL and intention to self-care. This study may be the first to

analyze and demonstrate the commonality of self-care abilities in Orem's theory[10] and the HL concept of Nutbeam.[18] The specific HL may provide a more favorable measurement than the generic HL, but it needs to be refined and tested in different settings. Factors contributing to predicting self-care behavior for stroke prevention include family support, the quality of the patient-provider relationship, and care provision should be explored. This implies that nurses and other healthcare personnel need to periodically assess the HL and intention to self-care for stroke prevention in PW-AF, especially in older adults or people with multiple comorbidities. Nursing practice should be highlighted to optimize interventions that enhance communication skills, decision-making, and intention. In addition, a self-care support program should be developed explicitly for PW-AF and family members. A technology-based assessment, e.g., wearable technology, provides additional methods for monitoring and evaluating self-care behavior. Since the study was a cross-sectional design, a causal relationship or longitudinal study is warranted in identifying the critical factors for self-care behavior for stroke prevention in PW-AF.

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พฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมองและปัจจัยที่เกี่ยวข้องสำหรับคนไทยที่มีภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้ว : การศึกษาแบบภาคตัดขวาง

อมรรัตน์ บุราณุรักษ์ อภิญญา ศิริพิทยาคุณกิจ สุมลชาติ ดวงบุบผา*

บทคัดย่อ: ภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้วเพิ่มความเสี่ยงของการเกิดโรคหลอดเลือดสมองที่สำคัญยิ่ง การมีพฤติกรรมการดูแลตนเองที่เหมาะสมและการใช้ยาละลายลิ่มเลือดมีความสำคัญต่อการป้องกันโรคหลอดเลือดสมอง อย่างไรก็ตาม งานวิจัยเกี่ยวกับเรื่องนี้ในคนไทยที่มีภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้วมีจำนวนน้อย การศึกษาเชิงพรรณนาแบบภาคตัดขวางในครั้งนี้มีวัตถุประสงค์เพื่อหาความสัมพันธ์ของปัจจัยส่วนบุคคล ความรอบรู้ด้านสุขภาพ ความตั้งใจในการดูแลตนเอง และพฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมองในคนไทยที่มีภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้ว ผู้เข้าร่วมวิจัยได้รับการรักษาด้วยยาละลายลิ่มเลือดที่มีคุณสมบัติตามกำหนดจำนวน 90 ราย ของโรงพยาบาลตติยภูมิแห่งหนึ่ง จังหวัดกรุงเทพมหานคร ประเทศไทย เก็บข้อมูลตั้งแต่เดือนมีนาคมถึงเดือนมิถุนายน พ.ศ. 2564 กลุ่มตัวอย่างตอบแบบสอบถามจำนวน 4 ฉบับ ได้แก่ แบบสอบถามพฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมอง แบบสอบความตั้งใจในการดูแลตนเอง แบบสอบถามความรอบรู้ด้านสุขภาพ และแบบสอบถามข้อมูลส่วนบุคคล วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สถิติสัมประสิทธิ์สหสัมพันธ์เพียร์สัน สถิติสหสัมพันธ์เชิงอันดับของสเปียร์แมนและการวิเคราะห์การถดถอยแบบลำดับชั้น

ผลการวิจัย พบว่าร้อยละ 74.4 ของกลุ่มตัวอย่างส่วนใหญ่เป็นผู้สูงอายุที่มีภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้ว และร้อยละ 96.7 ได้รับยาวาร์ฟารินโดยเฉลี่ย 5.13 ปี อายุ ระดับการศึกษา โรคร่วม ระยะเวลาได้รับยาละลายลิ่มเลือด ความรอบรู้ด้านสุขภาพ และความตั้งใจในการดูแลตนเอง สามารถร่วมกันทำนายพฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมองได้ร้อยละ 32.8 โดยความตั้งใจในการดูแลตนเองเป็นปัจจัยทำนายที่มีอิทธิพลมากที่สุด อย่างไรก็ตาม เนื่องจากตัวแปรในการศึกษาครั้งนี้อธิบายความแปรปรวนของพฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมองเพียงร้อยละ 32.8 ในการศึกษาครั้งต่อไปควรพิจารณาปัจจัยอื่น ๆ เช่น ปัจจัยสนับสนุนจากครอบครัว คุณภาพความสัมพันธ์ระหว่างผู้ป่วยและผู้ให้บริการ และปัจจัยด้านการบริการ เพื่อให้เกิดความเข้าใจพฤติกรรมการดูแลตนเองเพื่อป้องกันโรคหลอดเลือดสมองอย่างครอบคลุม พยาบาลสามารถใช้การศึกษานี้เป็นข้อมูลในการออกแบบการบำบัดทางการพยาบาลในการพัฒนาความรอบรู้ด้านสุขภาพ และความตั้งใจในการดูแลตนเองเพื่อป้องกันภาวะแทรกซ้อนจากการมีภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้ว

Pacific Rim Int J Nurs Res 2025; 29(1) 197-211

คำสำคัญ: ภาวะหัวใจห้องบนเต้นผิดจังหวะชนิดสั่นพลิ้ว ความรอบรู้ด้านสุขภาพ ความตั้งใจในการดูแลตนเอง พฤติกรรมการดูแลตนเอง โรคหลอดเลือดสมอง

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