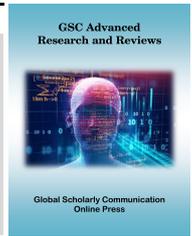


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(RESEARCH ARTICLE)

## Patient awareness on stroke fast track in primary care center

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Article DOI: <https://doi.org/10.30574/gscarr.2020.2.3.0017>**Abstract**

Stroke is a crucial public disease. Even though there is a service called stroke fast track, a number of patients still cannot be provided with rt-PA (recombinant tissue plasminogen alteplase), in time. The objective of this study is to evaluate the awareness of those who are at risk of having stroke. The sample group is chosen from the patients at Family Practice Center in Phranakorn Sri Ayutthaya Province. The findings indicate that from the total number of 346 participants, 94.8% of them have known the term “stroke”. However, only 11.6% of them have known the term “stroke fast track”, and 50% of this group reported that this term has been introduced to them by public health officers. The key factor (statistic value is  $p < 0.05$ ), which contributes to their awareness of stroke, is education level. Meanwhile, the main factors (statistic value is  $p < 0.05$ ) that contributes to their awareness of a within-3-hour time length required in receiving a treatment, are age and education level. It indicates the participants with under 60 years old (adj. OR 2.08 [95%CI 1.06, 4.07] and with High School Certificate or Vocational Diploma (adj. OR 4.41 [95%CI 1.15, 16.93]) have a better awareness of this matter. It can be concluded from the findings that although the majority of participants are familiar with the term, “stroke”, they still lack an awareness of stroke fast track.

**Keywords:** Stroke; Stroke Fast Track; Awareness; Family Practice Center**1. Introduction**

Stroke is a significant world's public health issue. World Stroke Organization (WSO) reported that stroke is the leading cause of death as 80 million people worldwide had this disease, and 50 million suffered from paralysis, a common outcome of a stroke. This accounted for 62.5% of world's population [1].

In Thailand, stroke was reported as the second most fatal non-infectious disease, coming after cancer in 2016 [2]. Statistics recorded by Public Health Department revealed that the rates of mortality per a hundred thousand people between 2012 and 2016 were 31.7%, 35.9%, 43.3% and 48.7% respectively, and it is projected to rise in the upcoming years [3]. Hence, it is apparent that stroke is the leading cause of death for world's population as well as Thai residents.

Currently, a treatment of acute stroke was proved to provide a 50% opportunity to cure patients with thrombosis successfully. The treatment is to give a patient recombinant tissue plasminogen alteplase (rt-PA) via their vein within 270 minutes after any unusual symptoms occurs [4]. Therefore, many hospitals provide a special service called “stroke fast track” in order to assist the patients to be given rt-PA more rapidly. Phranakorn Sri Ayutthaya Hospital had 444, 483 and 549 stroke patients between 2016 and 2019 respectively. Meanwhile, a number of patients who could access stroke fast track and get rt-PA without a prior prescription are 30, 18 and 27 from 2016 to 2019 respectively. Stroke fast track is provided in the emergency room of Phranakorn Sri Ayutthaya Hospital. The average time before a patient can receive

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rt-PA is 74.26 and 65 minutes. However, it is found that although stroke fast track was available, there were some patients who could not come and get the treatment in time. Thus, a researcher is interested in studying about patient's awareness of stroke and stroke fast track, and the sample group is patients from Family Practice Center in Phranakorn Sri Ayuthaya Province, Thailand.

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## 2. Methodology

### 2.1. Objective

To study about patient's awareness of stroke and stroke fast track at Family Practice Center in Phranakorn Sri Ayuthaya Province, Thailand.

### 2.2. Research Design and Processes

This study is a descriptive research, and the participants of study are 346 patients who receive health service at Family Practice Center in Phranakorn Sri Ayuthaya Hospital between August to November 2019. The finding is calculated by using the formula,  $n = NZ^2 / (4Ne^2 + Z^2)$ . To illustrate,  $n$  is sample size and  $Z$  is standard normal deviation set at 95% confidence level ( $Z = 1.96$ ).  $e$  is acceptable sampling error expressed as a proportion 0.05.

Inclusion criteria is that a participant must be over 20 years old and be diagnosed with high blood pressure, diabetes, dyslipidemia and/or heart disease. Exclusion criteria is that a participant must have never suffered from stroke before.

The study tool is a questionnaire called "an awareness of stroke fast track of people at risk in community", published by associate professor Nomjit Nualnet. The questionnaire can be divided into two parts. The first part contains personal questions, including gender, age, marital status, education, occupation and chronic medical issues. For the second part, there were the total of 16 questions, and the participants are questioned about their information access to stroke and stroke fast track as well as their awareness of stroke, stroke fast track, its symptoms and first aid process. The questionnaire can be answered by ticking a mark or writing down an answer. After giving an approval, each participant is interviewed by a researcher, and after the interview, they are also provided with the basic information of stroke and stroke fast track.

### 2.3. Data Analysis

The data is analyzed by a computer program called SPSS, and it is analyzed into descriptive statistics, such as figures, percentage, average number, standard deviation and relation analysis between different factors which contribute to an awareness of stroke fast track, by using Multiple Logistic Regression Analysis. This is presented with Adjusted OR ( $OR_{adj}$ ) and the confidence level is at  $p\text{-value} < 0.05$ .

### 2.4. Right to Protection and Research Ethics

This study has been approved by the committee of research ethics regarding to human study in Phranakorn Sri Ayuthaya Hospital. (The number of projects: 019/2562 signed at August 14, 2019.

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## 3. Results

### 3.1. General Information

From the total number of 346 participants, the majority of them (63.9%) were females. The average age is  $61.50 \pm 10.05$  years old, and Body Mass Index (BMI) is  $28.76 \pm 29.33$  kg/m<sup>2</sup>. It is found that 268 of them (77.5%) are married. Moreover, 216 of participants (53.2%) hold primary school certificate, and 174 of them (50.3%) are employed. Regarding to chronic health issues, 290 of them (83.8%) have high blood pressure. 266 (76.9%), 131 (37.9%) and 11 (3.2%) of them have dyslipidemia, diabetes, and heart disease respectively. A small number of participants who have other chronic diseases are also found. In addition, there are 179 participants who have two chronic diseases, accounting for 51.7%. (see Table 1)

**Table 1** General Information (n=346)

<b>General</b>	<b>Number (Persons)</b>	<b>Percentage</b>
<b>Sex</b>		
Male	125	36.1
Female	221	63.9
<b>Age</b>		
< 60 years old	124	35.8
> 60 years old	222	64.2
(mean ± SD = 61.50±10.05)		
<b>Body Mass Index (kg./m<sup>2</sup>)</b>		
< 23.0	74	21.4
≥ 23.0	272	78.6
<b>Status</b>		
Single	18	5.2
Married	268	77.5
Separated	60	17.3
<b>Education</b>		
None	13	3.8
Primary school	216	62.4
Secondary school / Certificated	86	24.8
Bachelor degree and above	31	9.0
<b>Occupation</b>		
No / Volunteer	172	49.7
Working	174	50.3
<b>Disease</b>		
Hypertension	290	83.8
Hyperlipidemia	266	76.9
Diabetes	131	37.9
Heart Disease	11	3.2
Others	15	4.3
<b>Chronic disease/Risk factors</b>		
1 disease	86	24.9
2 diseases	179	51.7
> 2 diseases	81	23.4

### 3.2. Information regarding stroke and stroke fast tract

The findings show that 328 participants (94.8%) have known about stroke, and 227 participants (69.2%) said that they have learned about this disease from other sources such as from their family or community members who have stroke as well as from electronic source. However, only 40 participants (11.6%) said that they have known about stroke fast

track, and the majority of them have been introduced to this service by public health officers and other sources (family members or neighbors) (See Table 2).

**Table 2** Awareness of “Stroke Fast Track”

	<b>Number (Persons)</b>	<b>Percentage</b>
Have you ever herd “Stroke Disease”?		
Ever	328	94.8
Never	18	5.2
Sources (n=328)		
Television/Radio	124	37.8
Suggestions from health personal	59	18.0
News/Journal	20	6.1
Brief let/Brochure	9	2.7
Others	227	69.2
Have you ever herd “Stroke Fast Track”?		
Ever	40	11.6
Never	306	88.4
Sources (n=40)		
Television/Radio	9	22.5
Suggestions from health personal	20	50.0
News/Journal	1	2.5
Brief let/Brochure	1	2.5
Others	13	32.5
Perception of Stroke disease’s warning signs		
Never	69	19.9
Weakness / Difficult to walk	146	42.2
Facial Paralysis	71	20.5
Difficult to speak	17	4.9
Headache	68	19.7
Dizziness	86	24.9
Numbness	87	25.1
Blurred Vision	10	2.9
Convulsion	6	1.7
Nausea Vomiting	4	1.2
First Aid for Persons with warning signs of Stroke		
No information	22	6.4
Refer to hospital	262	75.7
Massage	34	9.8

	<b>Number (Persons)</b>	<b>Percentage</b>
Rest	12	3.5
Alternative Medication	5	1.5
Waiting within 24 hours	1	0.3
Call to Physician	2	0.6
Others	8	2.3
Time management for caring stroke patients before refer		
< 3 hrs	271	78.3
> 3 hrs	75	21.7
Opinion with your stroke risk factors		
Risks (n=212)	212	61.3
Underlying disease	130	61.3
Family history	5	2.4
Normally occurrence	30	14.2
Others (Headache/Dizziness, Stress, Aging status, no exercise, and Diet)	47	22.2
No risks (n=134)	134	38.7
Chronic disease but no symptoms	103	76.9
Drug adherence, and normally exercise	15	19.7
Healthy	7	9.2
No stress	5	6.6
None of family history	4	5.3

The three key symptoms of stroke, which suggest that a patient should be sent to stroke fast track, are a sudden weakness of arm and/or leg on either one or two sides of the body, a sudden numbness of face and trouble speaking. The first, second and third symptom can be identified by 146 (20.5%), 71 (20.5%) and 17 (4.9%) participants respectively. However, it is found that 69 participants (19.9%) cannot identify any of these symptoms.

Regarding to the assistance of those who display the stroke symptoms, it is found that 262 participants (75.7%) can correctly answer that the patients must be sent to hospital immediately, but there were 22 participants (6.4%) do not know how to assist a stroke patient. For an awareness of the critical time length to send a patient to a hospital, it is found that 271 participants (78.3%) can correctly identify the time length according to stroke fast track's official guideline.

Regarding to the likeliness of having a stroke, it is found that even though all participants have high blood pressure, diabetes and/or dyslipidemia, which make them more prone to suffer from a stroke, 134 of them (38.7%) are not convinced that they are at risk of having stroke (See Table 2).

### 3.3. Information regarding the relationship between factors and the awareness of stroke

After the analysis, it is found that the factor that related to patient's awareness of stroke, having statistical significance at 0.05, is education level, being Primary Certificate (adj. OR 5.24 [95%CI 1.15, 23.87]), High School Certificate or Vocational Diploma (adj. OR 14.14 [95%CI 1.85, 108.21]) and Undergraduate Degree and higher (adj. OR 9.37 [95%CI 1.78, 113.35]) (See Table 3).

**Table 3** Factors related to the awareness of Stroke fast track

	Ever to hear Stroke fast track		adj. OR (95%CI)	p-value
	Ever (n=328)	Never (n=18)		
Sex				
Male	119 (36.3)	6 (33.3)	1	
Female	209 (63.7)	12 (66.7)	1.12 (0.34, 3.67)	0.848
Age				
< 60 years old	119 (36.3)	5 (27.8)	1.12 (0.32, 4.00)	0.858
> 60 years old	209 (63.7)	13 (72.2)	1	
Body Mass Index (kg. /m <sup>2</sup> )				
< 23.0	69 (21.0)	5 (27.8)	0.76 (0.24, 2.42)	0.646
≥ 23.0	259 (79.0)	13 (72.2)	1	
Status				
Single	16 (4.9)	2 (11.1)	1	
Married	258 (78.7)	10 (55.6)	3.93 (0.72, 21.38)	0.113
Separated	54 (16.5)	6 (33.3)	1.63 (0.24, 10.91)	0.613
Education				
None	10 (3.0)	3 (16.7)	1	
Primary school	204 (62.2)	12 (66.7)	5.24 (1.15, 23.87)	0.032*
Secondary school/Certificated	84 (25.6)	2 (11.1)	14.14 (1.85, 108.21)	0.011*
Bachelor degree	30 (9.1)	1 (5.6)	9.37 (1.78, 113.35)	0.047*
Occupation				
None/Volunteer	162 (49.4)	10 (55.6)	1	
Working	166 (50.6)	8 (44.4)	1.10 (0.35, 3.46)	0.875
Disease				
Hypertension	274 (83.5)	16 (88.9)	0.64 (0.13, 3.24)	0.591
Hyperlipidemia	253 (77.1)	13 (72.2)	1.84 (0.53, 6.36)	0.339
Diabetes	125 (38.1)	6 (33.3)	0.78 (0.25, 2.46)	0.673
Heart disease	10 (3.0)	1 (5.6)	0.63 (0.06, 6.42)	0.697
Others	14 (4.3)	1 (5.6)	0.64 (0.07, 5.79)	0.693
Chronic disease and Risk factors				
1 disease	82 (25.0)	4 (22.2)	1	
2 diseases	168 (51.2)	11 (61.1)	0.75 (0.23, 2.41)	0.623
> 2 disease	78 (23.8)	3 (16.7)	1.27 (0.28, 5.85)	0.761

\*p&lt;0.05, Multiple Logistic regression

### 3.4. Information regarding the relationship between factors and the awareness of a within-3-hour time length required in receiving a stroke treatment from stroke fast track

After the analysis, it is found that age, having statistical significance at 0.05, is the main factor that related to patient's awareness of a within-3-hour time length required in receiving a stroke treatment. Those aged under 60 (adj. OR 2.08 [95%CI 1.06, 4.07]) have a better awareness of this matter. Another main factor is the education level, being High School Certificate or Vocational Diploma (adj. OR 4.41 [95%CI 1.15, 16.93]) (See Table 4).

**Table 4** Factors related to perceptions of Stroke’s fast track in 3 hours

	Perception of time management		adj. OR (95%CI)	p-value
	Perceived within 3 hrs (n=271)	No Perceived within 3 hrs (n=75)		
<b>Sex</b>				
Make	98 (36.2)	27 (36.0)	1	
Female	173 (63.8)	48 (64.0)	1.19 (0.65, 2.18)	0.567
<b>Age</b>				
< 60 years old	106 (39.1)	18 (24.0)	2.08 (1.06, 4.07)	0.033*
> 60 years old	165 (60.9)	57 (76.0)	1	
<b>Body Mass Index (kg. /m<sup>2</sup>)</b>				
< 23.0	52 (19.2)	22 (29.3)	0.57 (0.31, 1.05)	0.072
≥ 23.0	219 (80.8)	219 (80.8)	1	
<b>Status</b>				
Single	12 (4.4)	6 (8.0)	1	
Married	214 (79.0)	54 (72.0)	2.47 (0.81, 7.51)	0.112
Separated	45 (16.6)	15 (20.0)	2.37 (0.66, 8.46)	0.184
<b>Education</b>				
None	8 (3.0)	5 (6.7)	1	
Primary school	164 (60.5)	52 (69.3)	2.34 (0.70, 7.85)	0.168
Secondary school/Certificated	75 (27.7)	11 (14.7)	4.41 (1.15, 16.93)	0.031*
Bachelor	24 (8.9)	7 (9.3)	1.82 (0.42, 7.87)	0.425
<b>Occupation</b>				
None/Volunteer	131 (48.3)	41 (54.7)	(ref.)	
Working	140 (51.7)	34 (45.3)	0.96 (0.53, 1.74)	0.881
<b>Disease</b>				
Hypertension	228 (84.1)	62 (82.7)	1.10 (0.53, 2.31)	0.792
Hyperlipidemia	204 (75.3)	62 (82.7)	0.67 (0.32, 1.41)	0.295
Diabetes	105 (38.7)	26 (34.7)	0.88 (0.47, 1.63)	0.676
Heart Disease	7 (2.6)	4 (5.3)	0.61 (0.16, 2.40)	0.481
Others	13 (4.8)	2 (2.7)	1.86 (0.39, 8.78)	0.433
<b>Chronic disease</b>				
1 disease	70 (25.8)	16 (21.3)	(ref.)	
2 diseases	136 (50.2)	43 (57.3)	0.72 (0.38, 1.37)	0.322
> 2 diseases	65 (24.0)	16 (21.3)	0.93 (0.43, 2.01)	0.851

\*p<0.05, Multiple Logistic regression

#### **4. Discussion**

According to the study, it is found that several participants have heard a term, “stroke”, but only 11.6% of them are familiar with a term, “stroke fast track”. This corresponds with the findings of previous studies [5,6,14], indicating that stroke fast track is not commonly known by the public. The majority of them have been introduced to this service by public health officers and other sources (family members or neighbors). This is different from other studies [7] as their samples have learned about stroke from television, and following by from medical staffs and relatives/neighbors. This might result from the fact that the sample of this study mostly consists of elderly people who usually get information from public health officers and neighbors, rather than electronic sources.

About the factors regarding to the awareness of stroke, the findings of this study correspond with the studies of Huang [8], Marx [9] and Pandian [10] as it reveals that those who are highly educated are more likely to have a better awareness of stroke. However, it is found in this study that gender is not a key factor, which does not correspond with earlier studies. In those studies, it is found that women pay less attention on stroke than men do [11]. The difference might result from the facts that in these days, stroke can be found in people with all genders, and in fact, it is a leading cause of death among females [2]. Regarding to the age, it is found that the participants aged less than 60 have more awareness of stroke than their older counterparts do, and this corresponds with the studies of Lundelin [12] and Hickey [13] which found that elderly people have lower awareness of stroke.

Regarding to the factor related to the awareness of a within-3-hour time length required in receiving a stroke treatment, it is found that the participants aged less than 60 have more awareness of this matter. This corresponds with the study of Hickey [13] which found that elderly people have lower awareness of stroke as well as of a critical time length required in receiving a treatment. In addition, it is found that other chronic diseases, other risks of having stroke, are not significantly related to the awareness of a critical time length required in receiving a treatment from stroke fast track.

Nevertheless, from this study, it is found that there are a number of participants who do not know terms, like “stroke” and “stroke fast track”. This might result from those terms are quite academic. Therefore, before publicizing the locals about stroke, it might be beneficial to study what terms they commonly use in the community. For example, some participants do not know stroke, but they have seen paralysis or semi-paralysis before. To acknowledge this difficulty might assist in having the locals to understand about the disease more easily.

In addition, from the study of the relationship between factors and awareness of stroke and of a within-3-hour time length in receiving a treatment, it is found that those aged less than 60 have more awareness of this matter. In other words, it is evident that elderly people, who are more at risk of having stroke, have lower awareness of this matter. Therefore, more campaigns should be launched to publicize information regarding stroke and its treatment to as many elderly people and their care providers as possible, so these senior residents can get a treatment from stroke fast track in time.

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#### **5. Conclusion**

In Family Practice Center of Phranakorn Sri Ayuthaya Hospital, those who are prone to have stroke are patients with high blood pressure, diabetes dyslipidemia and/or heart disease. It is found that the majority of participants are familiar with stroke, but merely a small proportion of them aware of stroke fast track.

The findings of this study could be beneficial for the hospital in planning their strategy and boosting the number of patients who can receive rt-PA within a critical time length. This will increase their chance of successful recovery and decrease the rate of paralysis as well as pressure of health care issues on family and society.

A further suggestion is that a researcher may compare between the patients who can get a treatment within a critical time length and those who cannot. Also, they can study about a care provider who can send a patient within a critical time length to identify what contributing factors are.

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## Compliance with ethical standards

### *Acknowledgments*

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### *Disclosure of conflict of interest*

The authors declared no potential conflicts of interest with respect to the research, authorship, and or publication of this article.

### *Statement of ethical approval*

As this study involves human subject, it has been approved by the committee of research ethics regarding to human study in Phranakorn Sri Ayuthaya Hospital, Thailand (The number of projects: 019/2562 signed at August 14, 2019)

### *Statement of informed consent*

This study involves information about any individual such as survey, interview. The informed consent was obtained from all individual participants included in the study.

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