

Factors influencing discharge readiness among patients with mild-to-moderate ischemic stroke: a cross-sectional study



Original article

Li-Fei Wang^a, Niphawan Samartkit^{b,*}, Khemaradee Masingboon^b

^aFaculty of Nursing, Burapha University, Tambon Saensuk, Amphur Muang, Chonburi 20131, Thailand

^bDepartment of Adult Nursing, Faculty of Nursing, Burapha University, Chonburi 20131, Thailand

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Abstract: **Objective:** To describe discharge readiness and determine whether self-efficacy, social support, and the quality of discharge teaching can predict discharge readiness among patients with mild-to-moderate ischemic stroke.

Methods: A total of 120 patients with mild-to-moderate ischemic stroke were recruited using simple random sampling. Five instruments, namely, the Demographic Data Questionnaire, the Chinese version of the Readiness for Hospital Discharge Scale (RHDS_C), the Self-Efficacy for Managing Chronic Disease 6-Item Scale (SES6), the Perceived Social Support Scale (PSSS), and the Quality of Discharge Teaching Scale (QDTS), were used for data collection. Descriptive statistics and standard multiple linear regression were used for data analysis.

Results: The mean score of discharge readiness among patients with mild-to-moderate ischemic stroke was at a moderate level ($M = 7.6$, $SD = 0.92$), and 75.8% of the participants felt ready for discharge. Standard multiple linear regression revealed that self-efficacy ($\beta = 0.62$, $P < 0.001$) and the quality of discharge teaching ($\beta = 0.28$, $P < 0.001$) were the influencing factors. However, social support could not predict discharge readiness significantly. All the factors combined explained 64.9% of the variance in discharge readiness.

Conclusions: Intervention programs aimed at improving self-efficacy and the quality of discharge teaching may be helpful in promoting discharge readiness in patients with mild-to-moderate ischemic stroke, especially in coping ability.

Keywords: discharge readiness • ischemic stroke • quality of discharge teaching • self-efficacy • social support

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1. Introduction

Ischemic stroke refers to ischemia, hypoxic necrosis of local brain tissue, and neurological dysfunction caused by blocked cerebral blood supply.¹ It is the most common type of stroke. In China, ischemic stroke accounted for 73% of all types of new stroke cases in 2019,² and the incidence was 145/100,000, which was a 35% increase over the last 30 years and also much higher than the global rate of 94.5/100,000 in 2019.^{2–4} The severity of stroke is usually classified by

the National Institutes of Health Stroke Scale (NIHSS). A score of 1–4 indicates a mild stroke, while a score of 5–15 indicates a moderate stroke.⁵ Compared with severe ischemic stroke, mild and moderate ischemic strokes account for a larger proportion, of which mild stroke patients account for nearly 50%, followed by moderate stroke patients (>30%).⁶

Not all patients with mild-to-moderate ischemic stroke have a good prognosis.⁷ A prospective cohort

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*Corresponding author.

E-mail: nsamartkit@gmail.com (N. Samartkit).

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study found that even after 3 months of treatment, 26% of the patients had a poor prognosis, such as increased disability.⁸ In addition, these patients will also experience some symptoms for a longer period, such as emotional instability, fatigue, difficulty with complex activities, and social weakness.⁷ If patients do not pay attention to these problems or the discharge preparation is not adequate, it may be difficult for them to adapt to the changes brought about by ischemic stroke, which may even increase the recurrence rate as well as readmission rate.^{9–11}

Discharge readiness reported by patients can reflect their subjective willingness and actual level of whether they are ready for discharge, including personal status, knowledge, coping ability, and expected support.¹² A previous study found that 26.9% of stroke patients reported insufficient readiness for discharge, 35.8% were at a moderate level, and most patients had difficulty accepting the reality because of the first onset.¹³ Thus, more efforts are needed to improve the discharge readiness of stroke patients, and the first and foremost is to identify its influencing factors. Discharge readiness has been proven to be related to many factors; however, most previous studies focused on stroke patients of all severity levels, rather than on patients with mild-to-moderate ischemic stroke.

This study was guided by Meleis' transitions theory. According to the conceptual model of this theory, discharge readiness is defined as a process indicator of the patterns of response during the transition period.¹² Personal, community, and society are the 3 transition conditions that will have positive or negative impacts on both the process and the outcome of transition. Another core concept is nursing therapeutics, which is closely related to the transition conditions and the patterns of response. This study selected self-efficacy as a personal factor, social support as a community resource factor, and the quality of discharge teaching as a therapeutic nursing factor.

Self-efficacy is the confidence of an individual in his/her ability to accomplish a particular task.¹⁴ It is related to the prognosis of patients with stroke. Social support refers to emotional support, tangible or practical support, or information support from others perceived by the patient.¹⁵ A good social support system could give patients more emotional care and help in life.¹⁶ Discharge teaching is a kind of patient education and coordination carried out by nurses in discharge planning activities and is the main nursing strategy to complete discharge preparation. This teaching provides various guidance, including daily life guidance, medication guidance, and identification of complications.¹⁷ Each of these factors has been shown to have a positive correlation or a positive effect on discharge readiness.^{10,18,19}

However, no previous studies have examined the relationship between these variables in patients with ischemic stroke simultaneously. Moreover, the existing research findings might not be necessarily applicable to patients with first-ever mild-to-moderate ischemic stroke.

Accordingly, this study aimed to examine the status of discharge readiness and determine whether self-efficacy, social support, and the quality of discharge teaching can predict discharge readiness among patients with mild-to-moderate ischemic stroke, to provide evidence for healthcare providers to develop more scientific intervention programs to improve the discharge readiness and facilitate an effective patient transition.

2. Methods

2.1. Design and participants

This study adopted a cross-sectional design. Patients with first-ever mild-to-moderate ischemic stroke who were admitted to 5 neurology wards of the First Affiliated Hospital of Wenzhou Medical University in Wenzhou, China, and were about to be discharged from the hospital were recruited through simple random sampling from August to September 2021. The inclusion criteria included patients (1) having an NIHSS score of 1–15 points, (2) aged 18 years or over, (3) having a Glasgow Coma Scale (GCS) score of 15 on the day of discharge, (4) having moderate or less disability after stroke (i.e., with a score of the modified Rankin Scale (mRS) ≤ 3 points), (5) being able to communicate normally in Mandarin Chinese and can read and write in Chinese, (6) having no cognitive disorder, and (7) having no history of psychiatric disorders.

The sample size was calculated by using G*Power 3.1.9.2. program (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany).²⁰ Linear multiple regression (fixed model) was selected as the statistical test model. A medium effect size of 0.13 was applied to calculate the sample size for generalization.²¹ The significance level (α) of 0.05, power ($1-\beta$) of 0.90, and 3 predictors were used for computing. The minimum sample size required was 114. Considering possible dropouts or potential outlier data, the sample size was increased by 10%,²² yielding a final sample size of 120.

2.2. Measurements

All research instruments used in this study were authorized for use by the original developers and the translators of the Chinese versions via email. The details of these instruments are described as follows.

2.2.1. Demographic Data Questionnaire

The Demographic Data Questionnaire consists of two parts, with a total of 18 items. The first part contains the general characteristics of participants, including gender, age, educational attainment, marital status, per capita monthly household income, occupation, place of residence, discharge destination, and number of family caregivers after discharge. The second part includes items on health information, such as the scores of NIHSS, GCS, Activities of Daily Living (ADL), mRS, presence of accompanying impairments, comorbidities, smoking status, alcohol consumption, and length of stay.

2.2.2. Chinese version of the Readiness for Hospital Discharge Scale

Discharge readiness was assessed using the Chinese version of the Readiness for Hospital Discharge Scale (RHDS_C) originally developed by Weiss and Piacentini¹² and translated into Chinese by Lin et al.²³ The RHDS_C is a brief scale with 3 subscales and a total of 12 items, including personal status (Items 1–3), coping ability (Items 4–8), and expected support (Items 9–12). Each item is scored from 0 (not at all) to 10 (totally). The scores of the total scale and the subscales are described using the item mean score, with a potential range from 0 to 10. Total scores can be divided into 4 levels: very high (9–10), high (8–8.9), moderate (7–7.9), and low (<7).²⁴ In addition, a cut-off score of 7 was used, a score of 7 or higher indicates readiness for discharge, while a score of <7 represents lack of readiness.²⁵ Cronbach's α for the total scale was 0.89.²³ In this study, Cronbach's α was also 0.89.

2.2.3. Self-Efficacy for Managing Chronic Disease 6-Item Scale

Self-efficacy was measured using the Self-Efficacy for Managing Chronic Disease 6-Item Scale (SES6) originally developed by Lorig et al.²⁶ and translated into Chinese by Fu.²⁷ The SES6 contains 6 items, each of which is measured on a score of 1 (not at all confident) to 10 (totally confident). The range of the possible scores for the total scale is 1–10 by calculating the mean score of the 6 items. The average score of the first 4 items indicates self-efficacy in symptom management, while the average of the latter two reflects self-efficacy in common disease management. A mean score of <5 on the total scale indicates a low level of self-efficacy, a score of 5–7 means a moderate level, and a mean score of >7 represents a high level of self-efficacy. Cronbach's α was 0.91.²⁶ In this study, this coefficient was 0.92.

2.2.4. Perceived Social Support Scale

The Perceived Social Support Scale (PSSS), a revised Chinese version of the Multidimensional Scale of Perceived Social Support (MSPSS),²⁸ was used to measure social support. It contains 3 dimensions referring to 3 sources of social support from family (Items 3, 4, 8, and 11), friends (Items 6, 7, 9, and 12), and significant others (Items 1, 2, 5, and 10). The PSSS uses a 7-point Likert scoring method similar to the MSPSS. A score of 1 means 'very strongly disagree,' while a score of 7 represents 'very strongly agree.' The total score of the scale ranges from 1 to 7 by calculating the average score of 12 items. The PSSS has 3 levels: low support (1–2.9), moderate support (3–5), and high support (5.1–7). Cronbach's α coefficients of this scale were 0.80 in the previous study²⁹ and 0.87 in this study.

2.2.5. Quality of Discharge Teaching Scale

The Quality of Discharge Teaching Scale (QDTS), a patient self-report tool, compiled by Weiss et al.¹⁷ and translated into Chinese by Wang et al.³⁰ was used to evaluate the quality of discharge teaching provided by nurses through the patient's perspective. The QDTS includes two factor structures, content and delivery, with a total of 24 items. The content subscale is composed of 6 paired items, which are divided into content needed and content received. The 12-item delivery subscale reflects the teaching skills and effects of nurses in providing the information for discharge.³¹ Each item of the scale is scored from 0 point to 10 points. The score of the total scale was calculated by adding the content received and the delivery subscale scores. The item mean scores are usually used to describe the total scale as well as the subscales, with possible scores ranging from 0 to 10.¹⁷ Cronbach's α reliability coefficient was 0.92.¹⁷ In this study, Cronbach's α was 0.87.

2.3. Data collection

The data were collected independently by the researcher (the first author of this article). Prior to collecting data, the candidates were informed of the research purpose, main content, ethical issues, and human rights protections. Participants filled out a self-administered questionnaire in a private room. The researcher was responsible for answering any questions that the participants had about the content of the questionnaire. After participants had completed and returned the questionnaire, the researcher verified completeness.

2.4. Data analysis

IBM SPSS 26.0 software (IBM Corporation, Armonk, New York, United States) was used for statistical analysis of the data. Descriptive statistics were used to describe the general characteristics of the sample and the results of each variable (e.g., means, standard deviation [SD], frequencies, and percentages). Since each variable met or approximated the assumption of normality, Pearson's correlation test was applied to examine the relationship between the independent and dependent variables. Finally, standard multiple linear regression, applying the enter method, was performed to determine the factors influencing discharge readiness. The significance level (α) was set to 0.05.

2.5. Ethical considerations

This study protocol was approved by the Institutional Review Board (IRB) of Burapha University in Thailand (Protocol code: G-HS039/2564) and the Ethics Committee in Clinical Research (ECCR) of the First Affiliated Hospital of Wenzhou Medical University in China (2021-094). Data were collected from only those patients who were willing to participate in this study and had signed an informed consent form. In addition, participants had the right to terminate or withdraw from the study at any time during the investigation. All questionnaires used to collect data were anonymous, and identifiers were replaced with numbers only, which did not reveal any information about the patients.

3. Results

3.1. Demographic characteristics

A total of 120 participants were investigated. 56.7% of the participants were male. The age ranged from 37 years to 84 years, with a mean of 63.7 years. 61.6% had completed only primary-level education. 87.5% were married. Per capita monthly household income of 4001–6000 Renminbi (RMB) was the most common (28.3%). Under half of the sample (45.0%) was employed. 52.5% came from rural areas, and 88.3% returned home after discharge. More than half the sample had 3–4 family caregivers after discharge.

The vast majority of participants had a mild ischemic stroke. All participants achieved a GCS score of 15 at discharge. The mean ADL score was 79.9 (SD = 18.35) at discharge. The mRS scores ranged from 0 to 3, with the largest percentage of the sample (64.2%) having a score of 1 on the day of discharge. 29.2% of participants

had a functional impairment, while 79.2% had comorbidities. More than one-third of the sample was current smokers and alcohol drinkers. The mean length of hospital stay was about 8 days (SD = 2.03). Table 1 presents the details of the demographic characteristics of the participants.

3.2. Description of discharge readiness

The mean score of discharge readiness was 7.6 (SD = 0.92) out of 10 among all participants in this study, which was at a moderate level. The expected

Characteristic	Number (n)	Percentage (%)
<i>Gender</i>		
Male	68	56.7
Female	52	43.3
<i>Age, years (M = 63.7, SD = 11.79, Min = 37, Max = 84)</i>		
30–44	10	8.3
45–59	35	29.2
60–74	50	41.7
≥75	25	20.8
<i>Educational attainment</i>		
Primary school	74	61.6
Middle school	32	26.7
High school	9	7.5
College, university, or above	5	4.2
<i>Marital status</i>		
Single	2	1.7
Married	105	87.5
Divorced	1	0.8
Widowed	12	10.0
<i>Per capita RMB monthly household income (in US\$)</i>		
≤¥ 2000 (\$315)	32	26.7
¥ 2001–¥ 4000 (\$315–\$629)	32	26.7
¥ 4001–¥ 6000 (\$629–\$944)	34	28.3
>¥ 6000 (\$944)	22	18.3
<i>Occupation</i>		
Employed	54	45.0
Civil servant/government staff	1	0.8
Labor (e.g., builder, factory worker, or sanitation worker)	36	30.0
Farmer	17	14.2
Unemployed	38	31.7
Retired	28	23.3
<i>Place of residence</i>		
Urban area	57	47.5
Rural area	63	52.5

Continued

Table 1. Continued

Characteristic	Number (n)	Percentage (%)
<i>Discharge destination</i>		
Home	106	88.3
Community health service center	5	4.2
Rehabilitation facility	9	7.5
<i>Number of family caregivers after discharge (M = 3.1, SD = 1.36, Min = 1, Max = 7)</i>		
1–2	39	32.5
3–4	62	51.7
≥5	19	15.8
<i>NIHSS score</i>		
<i>Admission day (M = 3.1, SD = 2.19, Min = 1, Max = 11)</i>		
1–4 (mild stroke)	98	81.7
5–15 (moderate stroke)	22	18.3
<i>Discharge day (M = 2.0, SD = 1.52, Min = 1, Max = 8)</i>		
1–4 (mild stroke)	111	92.5
5–15 (moderate stroke)	9	7.5
<i>GCS score</i>		
<i>Admission day</i>		
9–12 (moderate head injury)	7	5.8
13–15 (mild head injury)	113	94.2
<i>Discharge day</i>		
13–15 (mild head injury)	120	100
<i>ADL score</i>		
<i>Admission day (M = 71.7, SD = 22.72, Min = 10, Max = 100)</i>		
0–40 (severe dependence)	11	9.2
41–60 (moderate dependence)	39	32.5
61–99 (slight dependence)	57	47.5
100 (independent)	13	10.8
<i>Discharge day (M = 79.9, SD = 18.35, Min = 45, Max = 100)</i>		
41–60 (moderate dependence)	25	20.8
61–99 (slight dependence)	65	54.2
100 (independent)	30	25.0
<i>mRS score</i>		
<i>Admission day</i>		
1 (no significant disability despite symptoms)	56	46.7
2 (slight disability)	28	23.3
3 (moderate disability)	27	22.5
4 (moderately severe disability)	7	5.8
5 (severe disability)	2	1.7
<i>Discharge day</i>		

Continued

Table 1. Continued

Characteristic	Number (n)	Percentage (%)
0 (no symptoms)	6	5.0
1 (no significant disability despite symptoms)	77	64.2
2 (slight disability)	21	17.5
3 (moderate disability)	16	13.3
<i>Accompanying impairment*</i>		
No	85	70.8
Yes	35	29.2
<i>Comorbidities</i>		
No	25	20.8
Yes**	95	79.2
Hypertension	89	74.2
Diabetes	39	32.5
Heart disease	3	2.5
Others (gout, hyperthyroidism, hyperlipidemia)	10	8.3
<i>Smoking status</i>		
Currently smoking	42	35.0
Quit smoking	10	8.3
No history of smoking	68	56.7
<i>Alcohol drinking status</i>		
Currently drinking	43	35.8
Quit drinking	9	7.5
No history of drinking	68	56.7
<i>Length of stay, days (M = 7.9, SD = 2.03, Min = 2, Max = 14)</i>		
1–3	3	2.5
4–6	15	12.5
7–9	80	66.7
≥10	22	18.3

Note: *Hemiplegia, hemianopia, hemi-dyesthesia, aphasia, dysphagia, etc.

**One participant can have more than one comorbidity.

ADL, activities of daily living; GCS, Glasgow Coma Scale; mRS, modified Rankin Scale; NIHSS, National Institutes of Health Stroke Scale; SD, standard deviation.

Table 1. Frequency, percentage, mean, and SD of demographic characteristics of the participants (n = 120).

support subscale had the highest mean score of 8.2 (SD = 0.74), followed by personal status (M = 7.9, SD = 1.54). The coping ability subscale had the lowest mean score (M = 7.0, SD = 1.23) across all subscales. With a cut-off of 7, 75.8% of participants were ready for discharge. The highest number of participants (n = 45) had a moderate level of discharge readiness (37.5%). Table 2 presents discharge readiness and values of the subscales as reported by the participants.

3.3. Description of self-efficacy, social support, and the quality of discharge teaching

The mean score of self-efficacy was 6.7 (SD = 1.30), and the mean score of social support was 4.6 (SD = 0.57), both of which were at a moderate level. The quality of discharge teaching scores ranged from 5.7 to 8.9, with a mean of 7.3 (SD = 0.72). The details of these selected independent variables and the values of the subscales are shown in Table 3.

3.4. Relationship between independent variables and discharge readiness

Pearson's correlation test was performed to examine the relationship between independent variables and discharge readiness. Table 4 shows the correlation matrix among the studied variables. Discharge readiness was significantly and positively correlated with self-efficacy ($r = 0.76$, $P < 0.001$), social support ($r = 0.48$, $P < 0.001$), and the quality of discharge teaching ($r = 0.54$, $P < 0.001$).

Discharge readiness	Range		M	SD	Interpretation
	Possible score	Actual score			
Discharge readiness	0–10	5.2–9.3	7.6	0.92	Moderate
Personal status	0–10	3.7–10.0	7.9	1.54	Moderate
Coping ability	0–10	3.8–9.4	7.0	1.23	Low
Expected support	0–10	5.8–9.5	8.2	0.74	High

Note: SD, standard deviation.

Table 2. Range, mean, SD, and interpretation of discharge readiness and its subscales among the participants ($n = 120$).

Independent variable	Range		M	SD	Interpretation
	Possible score	Actual score			
<i>Self-efficacy</i>	1–10	3.5–9.3	6.7	1.30	Moderate
Symptom management	1–10	3.3–10.0	6.9	1.45	-
Common disease management	1–10	2.0–9.0	6.1	1.21	-
<i>Social support</i>	1–7	3.2–6.1	4.6	0.57	Moderate
Family	1–7	4.5–7.0	5.7	0.53	-
Friends	1–7	2.0–5.8	3.9	0.76	-
Significant other	1–7	2.3–6.0	4.3	0.75	-
<i>Quality of discharge teaching</i>	0–10	5.7–8.9	7.3	0.72	-
Content needed	0–10	3.8–8.8	6.5	1.01	-
Content received	0–10	4.8–8.7	6.6	0.86	-
Delivery	0–10	5.1–9.3	7.7	0.91	-

Note: SD, standard deviation.

Table 3. Range, mean, SD, and interpretation of self-efficacy, social support, and quality of discharge teaching among the participants ($n = 120$).

	Discharge readiness	Self-efficacy	Social support	Quality of discharge teaching
Discharge readiness	1.00			
Self-efficacy	0.76***	1.00		
Social support	0.48***	0.57***	1.00	
Quality of discharge teaching	0.54***	0.40***	0.27***	1.00

Note: *** $P < 0.001$.

Table 4. Correlation matrix among the independent and dependent variables ($n = 120$).

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>P</i> -value
Self-efficacy	0.44	0.05	0.62	8.83	<0.001
Social support	0.08	0.11	0.05	0.74	0.46
Quality of discharge teaching	0.36	0.08	0.28	4.62	<0.001

Note: Constant = 1.66, $R^2 = 64.9\%$, $R^2_{(adj)} = 64.0\%$, $F_{(3,116)} = 71.64$, $P < 0.001$.

SE, standard error.

Table 5. Determinants of discharge readiness among the participants ($n = 120$)

3.5. Factors influencing discharge readiness among patients with mild-to-moderate ischemic stroke

The results of the standard multiple linear regression analysis (Table 5) indicate that self-efficacy, social support, and the quality of discharge teaching explained 64.9% of the variance in discharge readiness among patients with first-ever mild-to-moderate ischemic stroke ($F_{3,116} = 71.64$, $P < 0.001$). Among the 3 factors, self-efficacy ($\beta = 0.62$, $P < 0.001$) and the quality of discharge teaching ($\beta = 0.28$, $P < 0.001$) can significantly predict discharge readiness, while social support had no association with discharge readiness ($\beta = 0.05$, $P = 0.46$).

4. Discussion

In this study, the mean score of discharge readiness among patients with mild-to-moderate ischemic stroke was 7.6, which was at a moderate level. This result is consistent with previous studies in the northern part of the mainland of China and Taiwan, China.^{10,13,32} The finding of this study that most participants were ready for discharge is related to the improvement of the patients' physiological state before discharge. In the current study, participants' NIHSS and mRS scores had decreased, and their ADL scores had increased to some extent. This implies that they were able to carry out daily activities on their own or with minimal assistance.

Another fact about the length of stay cannot be ignored. Length of stay is generally viewed as the nature of the transition in transitions theory.¹⁷ In this study, most participants were hospitalized for 7–9 d, with an average of 7.9 d, which is longer than that in Western countries.³³ Patients who stay in the hospital longer are more likely to receive more information and support from the health-care system of the hospital. Their physical and psychological conditions may also be more stable.

Community is another part of the transition condition, which could be a facilitator for a successful transition.³⁴

In this study, nearly two-thirds of the participants were elderly patients. Under the background of Chinese culture, elderly patients have close contact with their adult children and may even live together. Participants in this study had an average of 3 or more family members involved in their daily care after discharge. In addition, participants who reported that their destination after discharge was home accounted for 88.3%, and 87.5% were married. All these factors indicate that most of the sample could expect to enjoy companionship, assistance, moral support, and acceptance from their family members.^{13,35} Therefore, most participants felt ready to be discharged, as reflected by the mean score of expected support, which was the highest across all subscales of the RHDS_C.

However, another 24.2% of participants still felt unready for discharge. Ischemic stroke has shown a trend of youth, with more than one-third of the sample in this study (37.5%) being middle-aged or younger. In contrast to the elderly, younger adults were more likely to face coping difficulties, possibly because they had the conflicting demands of being the breadwinner of the family and daily work responsibilities.¹⁷ Moreover, when working-age stroke patients have to rely on others, they may experience reduced self-esteem, have fewer social interactions, and become even more depressed. Patients with poorer self-care ability had lower personal status scores. As a result, the overall level of discharge readiness was only moderate. Nurses can optimize the discharge process for patients with first-ever mild-to-moderate ischemic stroke and routinely assess discharge readiness. In addition, the implementation pathway for discharge planning should be standardized.

Self-efficacy was the most important predictor of discharge readiness in patients with first-ever mild-to-moderate ischemic stroke. Participants with higher self-efficacy had higher scores of discharge readiness. This finding is consistent with a previous study.¹⁰ Self-efficacy is considered an individual's subjective judgment and is related to confidence about whether he/she can accomplish a particular task and achieve the desired outcome. Thus, the sense of self-efficacy can directly affect an individual's attitude in the face of obstacles or difficulties as well as health behavior.³⁶ A systematic review found that stroke patients with higher self-efficacy performed better in ADL; they were also less likely to experience post-stroke depression and, therefore, had a better transition to hospital discharge, which subsequently led to a better quality of life.¹⁴ As a result, the level of self-efficacy can predict whether a patient is adequately prepared for discharge.

The quality of discharge teaching is another factor that can significantly affect discharge readiness. This

finding is similar to that of previous studies.^{19,37} Discharge teaching refers to the synthesis of all teaching content received by a patient during hospitalization. It is the main nursing strategy to complete discharge preparation.³⁸ Within the framework of transitions theory, discharge teaching is often defined as one kind of nursing therapeutics that facilitates transition.¹⁷ Discharge teaching was able to improve patients' willingness to be discharged and help them cope with difficulties that may occur in the early stages after discharge.¹⁷ The quality of discharge teaching measures patients' acceptance of the content of discharge education and reflects nurses' teaching skills. The latter has a higher correlation with the level of discharge readiness.¹⁷ As the quality of discharge teaching was relatively high in the current study, the ideal level of discharge readiness could be predicted.

Inconsistent with our research hypothesis and the previous literature,¹⁸ although social support was positively correlated with discharge readiness, it had no significant impact on discharge readiness. Social support did not significantly affect discharge readiness among the sample in this study, possibly because the social support experienced by participants was what they perceived during their hospitalization. In addition, during the study period, China was experiencing a partial resurgence of the spread of Coronavirus Disease 2019 (COVID-19), which prompted the hospital to adopt stricter controls. Limited visitation and companionship left hospitalized patients with a lack of social support, especially from friends.

Given the discussion of the aforementioned factors, individualized intervention strategies can be applied to improve patients' self-efficacy and their exposure to and comprehension of discharge teaching. Meanwhile, nurses should play a bridging role to promote remote collaboration among medical institutions to ensure that patients have access to nearby medical resources and continuous professional support after discharge.

5. Conclusions

This study found that most patients with mild-to-moderate ischemic stroke were ready for discharge but had only a moderate level of discharge readiness. Self-efficacy and the quality of discharge teaching were the two influential determinants of discharge readiness. A high level

of self-efficacy and the quality of discharge teaching can promote the patients to feel ready to be discharged. Relevant interventions need to be developed and validated in future to further improve discharge readiness and transition outcomes.

Strengths and limitations

This study investigated discharge readiness among patients with first-ever mild-to-moderate ischemic stroke and validated its influencing factors. The results provided evidence for nursing practice in discharge sessions that include improving discharge readiness. However, this study also has some limitations. As the samples were recruited from only one hospital, the generalizability of the findings may be limited. The cross-sectional survey used in this study had difficulty explaining the causal relationship between these factors and discharge readiness.

Multicenter studies with large samples may be attempted in future to avoid these limitations. Appropriate interventions or standardized practice guidelines need to be developed to improve the quality of discharge teaching provided by nurses and patients' self-efficacy. In addition, qualitative studies could be used to explore the reasons why some patients were not ready for discharge.

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Ethical approval

This study protocol was approved by the Institutional Review Board (IRB) of Burapha University in Thailand (Protocol code: G-HS039/2564) and the Ethics Committee in Clinical Research (ECCR) of the First Affiliated Hospital of Wenzhou Medical University in China (2021-094).

Conflicts of interest

All contributing authors declare no conflicts of interest.

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