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ORIGINAL RESEARCH

The Correlation Between Medication Self-Management with Rational Medication Use Self-Efficacy and Medication Literacy in Patients with Stroke

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Objective: To investigate medication self-management in patients with stroke and its relationship with general demographics, self-efficacy and medication literacy.

Methods: This was a cross-sectional study. Patients with stroke who received treatment in Jiangnan University Affiliated Hospital between July 2023 and January 2024 were selected as the study participants. The General Characteristics Questionnaire, the Self-Efficacy for Appropriate Medication Use Scale (SEAMS), the Chinese version of the Drug Literacy Scale and the Self-Administration of Medication tool were used to investigate patients with stroke and to analyse the factors influencing the self-management of their medication.

Results: A total of 210 patients were included in this study. The average score of medication self-management was 66.71 (standard deviation = 9.55), and SEAMS and medication literacy scores were positively correlated with the total score of medication self-management behaviour. Furthermore, we found that the Barthel index (BI), SEAMS and medication literacy scores were the main predictors of medication self-management behaviour ($R^2 = 0.790$, $p < 0.001$).

Conclusion: This study found that patients with stroke with a lower BI and higher SEAMS or medication literacy scores also had higher levels of medication self-management. The factors discussed in this study may help develop individualised interventions in medication self-management for patients with stroke.

Keywords: stroke, medication self-management, medication literacy, self-efficacy

Introduction

Stroke is a chronic, non-communicable disease associated with high rates of morbidity, recurrence, disability and mortality.[1] It is the third leading cause of death and the fourth leading cause of disability among adults globally.[1,2] In 2021, there were 11.9 million new cases of stroke and 7.3 million deaths from the condition, accounting for 10.7% of all deaths. Stroke accounted for 160.5 million disability-adjusted life-years, representing 5.6% of the total.[1,2] China, the largest developing country, also has the highest number of patients with stroke in the world.[3] Stroke is the leading cause of death and disability among Chinese adults and poses a serious threat to the health of the Chinese population. The China Stroke Statistical Report 2021 shows that the prevalence of stroke in China is approximately 1114 per 100,000 population, and the annual incidence rate is approximately 246 per 100,000 population.[4] These figures are higher than those reported in neighbouring regions. For example, the prevalence in Japan is approximately 850 per 100,000 population, and in South Korea, it is approximately 900 per 100,000 population.[1] The higher prevalence and incidence

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rates in China highlight the urgent need for effective management of stroke and its related comorbidities. For the prevention of secondary strokes (ischaemic and haemorrhagic), as well as for the treatment of comorbidities and secondary diseases associated with the stroke itself, regular and effective medication therapy is often used.[4] However, patients with stroke tend to be comorbid with one or more chronic primary diseases, such as hypertension, diabetes mellitus or coronary artery disease, making polypharmacy common in such patients.[5] As a result, even though there may be a need for multiple medications for secondary stroke prevention and management of comorbidities, there is also a risk of potentially inappropriate medication use.[6] Therefore, improving patients' medication self-management can significantly reduce the risk of stroke recurrence and complication rates.[7]

Medication self-management is the set of tasks, skills and behaviours related to an individual's ability, capacity and motivation to manage the physical, social and cognitive lifestyle factors, changes and consequences of taking or not taking medications.[7] Previous studies have shown that in-hospital self-medication can improve patients' medication knowledge and independence in self-medication, increase correct medication use and reduce medication errors.[8–10] Relevant studies have shown that correct and adequate medication knowledge and a positive attitude toward disease treatment are the basis for improving the ability of medication self-management.[11–13] Cadel et al emphasised that although many interventions focus on medication adherence, there is a need for more comprehensive approaches that address the broader aspects of medication self-management, including understanding, self-efficacy and overall medication management skills.[7] The review also highlighted the importance of delivering interventions across different settings, such as community-based programmes, to better support medication self-management post-stroke.[7]

Medication literacy refers to an individual's ability to obtain, understand, communicate, calculate and process information about medications in order to make informed medication and health decisions and to take medications safely and effectively.[14] Medication literacy can be an important predictor of the rational use of medications and can have a significant impact on medication safety in clinical practice.[15,16] Some studies have shown that medication literacy contributes to medication safety and better outcomes for patients with stroke.[17] However, the relationship between medication literacy and self-management is unclear. Cadel et al demonstrated that although medication literacy is a key element, it is often not the sole focus of interventions. On the contrary, interventions that integrate medication literacy with other aspects of self-management, such as self-efficacy and behavioural skills, are likely to be more effective in improving overall medication self-management abilities.[7]

Self-efficacy refers to an individual's confidence in their ability to perform specific tasks, such as taking medication correctly.[18] The Information–Motivation–Behavioural Skills (IMB) model, first proposed by Fisher in 1996,[19] provides a theoretical framework for understanding how individuals change their health behaviours. In this model, self-efficacy is a crucial component of behavioural skills and plays a key role in changing health behaviours. Specifically, self-efficacy acts as a mediator between motivation and actual behaviour, determining whether an individual can translate their intentions into action.[18,19] Higher levels of self-efficacy have been associated with better medication adherence and health outcomes in various chronic conditions.[20,21] In the context of patients with stroke, self-efficacy is particularly important because it can directly influence medication self-management. Previous studies have explored the relationship between self-efficacy and medication self-management in different populations. For example, a cross-sectional study conducted in a neurology clinic in Malaysia examined stroke survivors' self-efficacy in understanding and taking medication and identified associated factors.[22] Another multicentre cross-sectional study in China, which focused on chronic diseases but included patients with stroke, found a significant relationship between self-efficacy and adherence to self-management and medication.[23] These studies highlight the importance of self-efficacy in medication self-management and suggest that interventions targeting self-efficacy can improve medication adherence and overall health outcomes. The IMB model was chosen as the theoretical framework for this study because it comprehensively covers the multifaceted nature of medication self-management. Unlike other models that may focus solely on one aspect (eg motivation or behaviour), the IMB model integrates information, motivation and behavioural skills, providing a holistic view of the factors influencing medication self-management. This model is particularly relevant to patients with stroke, who often face complex medication regimens and multiple comorbidities. By incorporating self-efficacy as a key component, the IMB model helps us better understand the psychological factors that drive successful medication self-management.

In conclusion, medication literacy and self-efficacy may be strongly associated with medication self-management ability. However, it is unclear whether medication literacy and self-efficacy lead to an improved ability to self-manage medications in patients with stroke. Therefore, this study investigates the medication self-management of patients with stroke and its relationship with sociodemographic factors, medication literacy and self-efficacy.

Participants

This cross-sectional study was conducted in the Department of Neurology at Jiangnan University Affiliated Hospital (a tertiary hospital) between July 2023 and January 2024, surveying a total of 210 patients with stroke who visited the department. The inclusion criteria were as follows: patients (1) meeting the diagnostic criteria of acute ischaemic stroke,[24] with diagnosis confirmed by computed tomography or magnetic resonance imaging of the head; (2) aged ≥18 years; (3) stroke in recovery and on medication duration >3 months; (4) having basic communication skills and able to understand simple instructions; and (5) providing informed consent and offering voluntary participation in this study. The exclusion criteria were as follows: (1) becoming unconscious or incapacitated; or (2) the presence of severe heart failure, respiratory failure, tumours or other end-stage conditions. The study plan was approved by the Ethics Committee of the affiliated hospital of Jiangnan University (Ethics Approval Number: LS2023063)

Instruments and Methods

General Information

As in previous literature research,[7] demographic data were self-reported by the participants and included gender, age, marital status, living conditions, educational level, occupation status, income level, medical insurance type, residence, number of strokes, complications, history of hospitalisation (for stroke or cerebrovascular disease), time of last stroke, severity of stroke, family history of stroke, cognitive impairment, daily medication frequency, medication type, contact with a healthcare provider (if the patient has a family doctor or regular inspection in the community health service centre) and Barthel index (BI).

Stroke severity was assessed using the National Institutes of Health Stroke Scale, which assesses the degree of functional impairment caused by stroke and consists of 11 tests with scores ranging from 0 to 42. Higher scores are indicative of more severe strokes and are positively correlated with the volume of stroke-induced brain damage. A score of 0 is classified as no stroke symptoms, 1–4 as mild stroke, 5–15 as moderate stroke, 16–20 as moderate to severe stroke and 21–42 as severe stroke.[25]

Cognitive impairment was assessed using the Montreal Cognitive Assessment (MoCA),[26] which was based on clinical experience and with reference to the cognitive item set and scoring criteria of the Mini-Mental State Examination as a rapid screening tool for mild cognitive abnormalities. The MoCA scale consists of 12 questions that test the following cognitive domains: attention and concentration, executive functioning, memory, language, visuospatial skills, abstract thinking, computation and orientation. The MoCA scale has a total score of 30, with a score of >26 being considered cognitively normal and a score of <26 being considered cognitively impaired.

The BI has been proposed as a popular tool for assessing patients' ability to perform activities of daily living. It assesses the patient's status in terms of 10 representative aspects of self-care ability and has been widely used in clinical practice and in many studies to measure functional recovery in patients with stroke.[27]

Self-Efficacy for Appropriate Medication Use Scale

Self-efficacy for medication use was assessed using the 13-item Self-efficacy for Appropriate Medication Use Scale (SEAMS). The SEAMS measures the respondent's confidence that they would take medication appropriately under various circumstances.[28] Each item is scored on a 3-point Likert scale. Scores range from not confident (1 point) to very confident (3 points). The total score is the sum of the scores from all items and ranges from 13 to 39, with higher scores indicating higher confidence levels. The Chinese version of the SEAMS has shown good reliability and internal consistency (Cronbach's alpha [α] ranging from 0.83 to 0.92) in patients with stroke.[29] In this study, the scale's overall Cronbach's α was 0.870, indicating good reliability.

The Chinese Version of the Medication Literacy Scale

The Chinese version of the medication literacy tool is derived from the original assessment questionnaire in Spanish and English by Sauceda et al,[30] which was developed for the assessment of patients' medication literacy. There are 14 items in the tool. Four medication-use scenarios were simulated while using the scale, including following the doctor's instructions for injecting insulin, taking over-the-counter fever medicine for children, recognising the name of a prescription medication and calculating the correct dose and understanding the instructions for administering the medication. The scores were given on a 2-point scale out of a total of 14 points, where higher scores indicated a higher level of medication literacy in each of the participants. The overall Cronbach's α coefficient for the scale was 0.81. The scale has a Chinese translation and application.[31] In this study, the overall Cronbach's α of the scale was 0.918, indicating good reliability.

Self-Administration of Medication Tool

This scale was developed by Manias et al[32] to comprehensively assess patients' ability to self-medicate, including their understanding and knowledge of the medication regimen, and their self-medication experience. The scale includes three dimensions: medication self-management ability (11 items), medication self-management experience (7 items) and medication self-management cognition (6 items). Using a Likert 5-point scoring method, with 'never', 'rarely', 'sometimes', 'often' and 'always' scored as 0, 1, 2, 3 and 4, respectively, the total score is calculated by summing the scores of 24 items. The higher the level of self-management is, the more capable patients are of managing their own medications; according to the source dose table, a score of >60 points denotes competent and a score of <60 points incompetent. The overall Cronbach's α coefficient for the scale was 0.899. The scale has a Chinese translation and application.[33] In this study, the overall Cronbach's α of the scale was 0.913, indicating good reliability.

Data Collection and Quality Control

Before the questionnaire was conducted, the questionnaire respondents were trained uniformly. The study was conducted using an online questionnaire format. The researcher prepared the questionnaire through the QuestionStar program (Changsha Ranxing Information Technology Co., Ltd., Changsha, Hunan, China) and the questionnaire was administered face-to-face to the patients by the questionnaire surveyors. The surveyors explained the topics to the patients one by one; for those patients with limited mobility, questions were asked directly to them or their family members by the nursing staff. After the questionnaires were completed and submitted, a detailed review of the responses was conducted to ensure the completeness and accuracy of the data. During the review process, a focus was placed on whether there were missing items in the questionnaires, whether the answers were consistent and whether the data were accurate. For example, a check was made of whether the medication reported by the patients was consistent with their medical records and whether the questions in the questionnaires were answered correctly and without logical contradictions. Any questionnaires with these problems were excluded by the data analyst to ensure the quality of the data for the final analysis. The data from each questionnaire were coded and entered into the database after being checked by two professional data quality controllers. Through this rigorous review process, questionnaires that did not meet the requirements were excluded, thereby improving the reliability and scientific integrity of the research results.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, version 27.0 (IBM Corp., Armonk, NY, USA). Measurement data were expressed as mean ± standard deviation, and counting data were expressed as (n, %). The Shapiro–Wilk test was used to test the normality of the measurement data. The data that met the normality test were analysed via the *t*-test, and the count data were analysed using one-way analysis of variance. Stepwise multiple linear regression was used to analyse the influencing factors of patients' medication self-management behaviour. The Pearson correlation coefficient was used to analyse the correlation between the SEAMS score, medication literacy and medication self-management behaviour. A two-sided test was used, and a p-value of <0.05 was considered statistically significant.

Results

General Information About the Participants

A total of 245 patients were initially included in this study. A total of 222 questionnaires were collected, of which 210 were valid. Therefore, 210 patients were finally included in the study, of whom 55.7% were men and 44.3% were women. Participants were mainly people aged 60 and above, accounting for as high as 73.8%, while people aged 45–59 account for 25.7%, and people aged 18–44 account for only 0.5%; 84.8% of patients had a spouse; 73.3% of the patients lived in urban areas, and 26.7% lived in rural areas; the highest educational level of the participants was junior high school (39.5%); 14.8% of the participants had an annual family income of >100,000 yuan; 69.5% of the patients had medical insurance for urban workers; 27.6% of the patients had a family history of stroke; 59.5% received medication three times per day; 32.9% had contact with healthcare providers; and the self-care ability of 27.1% of the patients' was at a slightly dependent level. Other general information regarding those participating is presented in Table 1.

Table 1 Sample Characteristics (n=210, %)

Characteristics		N	%
Sex	Male	117	55.7
	Female	93	44.3
Age (years)	18–44	1	0.5
	45–59	54	25.7
	≥60	155	73.8
Marital status	Married	178	84.8
	Unmarried	1	0.5
	Divorced or widowed	31	14.8
Living conditions	Living alone	13	6.2
	Living with others	197	93.8
Level of education	Primary and below	51	24.3
	Junior high school	83	39.5
	High school	51	24.3
	Junior college or above	25	11.9
Occupation	Occupied	53	25.2
	Retired	143	68.1
	Jobless	14	6.7
Annual income (CNY)	<10,000/year	14	6.7
	10,000–29,000/year	31	14.8
	30,000–49,000/year	66	31.4
	50,000–99,000/year	68	32.4
	≥100,000/year	31	14.8
Type of medical insurance	Medical insurance for urban workers	146	69.5
	Medical insurance for urban residents	15	7.1
	New rural cooperative medical insurance	48	22.9
	Business insurance	0	0
	Self-pay	1	0.5
	Public medical care	0	0
Living area	City	154	73.3
	Rural	56	26.7
Number of strokes	0	126	60.0
	1	70	33.3
	2	11	5.2
	≥3	3	1.4

(*Continued*)

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Table 1 (Continued).

Characteristics		N	%
Hospitalization history	Never	57	27.1
	Occasionally	112	53.3
	Frequently	41	19.5
Family history of stroke	Yes	58	27.6
	No	152	72.4
Number of, complications	1	85	40.5
	2	63	30.0
	≥3	62	29.5
Number of medications currently taken	≤3	41	19.5
	4–6	74	35.2
	≥7	95	45.2
Times of medication use per day	1	8	3.8
	2	49	23.3
	3	125	59.5
	≥4	28	13.3
Contact with health care providers	Yes	69	32.9
	No	141	67.1
Barthel Index	Independence	134	63.8
	Slightly dependent	57	27.1
	Moderate dependence	17	8.1
	Heavy dependence	2	1.0
	Complete Dependence	0	0

Note: 1 RMB=0.15 USD.

Factors Associated with Medication Self-Management Behaviours

The association between medication self-management behaviours in patients with stroke and the general demographic characteristics of study participants is shown in Table 2. General demographic characteristics associated with self-management included age ($F = 8.578$, $p < 0.01$), level of education ($F = 25.343$, $p < 0.01$), occupation ($F = 19.778$, $p < 0.01$), annual income ($F = 34.521$, $p < 0.01$), type of medical insurance ($F = 6.213$, $p < 0.01$), living area ($t = 2.726$, $p = 0.008$), hospitalisation history ($F = 7.161$, $p < 0.01$), number of health problems ($F = 3.793$, $p = 0.024$), times of medication use per day ($F = 3.197$, $p = 0.024$), contact with healthcare providers ($t = 2.062$, $p = 0.041$) and BI ($F = 27.228$, $p < 0.01$).

Table 2 Comparison of Medication Self-Management Ability of Stroke Patients with Different Characteristics (n=210, Mean ± SD)

Characteristics		Medication Self-Management		
		Mean±SD	t or F	*P* Value
Sex				
	Male	66.40±9.50	F=0.063	0.801
	Female	67.10±9.63		
Age(years)				
	18–44	73.00±0.00	F=8.578	<0.01
	45–59	71.10±7.27		
	≥60	65.14±9.80		

(*Continued*)

Table 2 (Continued).

Characteristics		Medication Self-Management		
		Mean±SD	t or F	*P* Value
Marital status				
	Married	67.57±9.37	F=4.988	0.08
	Unmarried	58.00±0.00		
	Divorced or widowed	62.06±9.36		
Living conditions				
	Living alone	63.38±7.82	F=1.233	0.268
	Living with others	66.92±9.63		
Level of education				
	Primary and below	59.57±8.74	F=25.343	<0.01
	Junior high school	66.14±8.66		
	High school	70.76±7.55		
	Junior college or above	74.88±6.75		
Occupation			F=19.778	<0.01
	Occupied	71.17±6.64		
	Retired	66.22±9.67		
	Jobless	54.86±5.67		
Annual income (CNY)				
	<10,000/year	54.36±5.77	F=34.521	<0.01
	10,000–29,000/year	58.90±7.36		
	30,000–49,000/year	64.73±9.74		
	50,000–99,000/year	70.91±5.94		
	≥100,000/year	75.10±5.14		
Type of medical insurance				
	Medical insurance for urban workers	68.20±9.68	F=6.159	<0.01
	Medical insurance for urban residents	66.67±8.14		
	New rural cooperative medical insurance	61.94±7.94		
	Business insurance	0		
	Self-pay	79.00±0.00		
	Public medical care	0		
Living area				
	City	67.74±9.59	t=2.726	0.008
	Rural	63.88±8.89		
Number of strokes				
	0	66.89±8.82	F=0.531	0.661
	1	66.90±10.59		
	2	63.18±9.47		
	≥3	67.67±16.20		
Hospitalization history				
	Never	70.21±7.59	F=7.161	<0.01
	Occasionally	66.21±9.20		
	Frequently	63.20±11.39		
Family history of stroke				
	Yes	67.52±10.52	F=2.231	0.137
	No	66.40±9.17		

(*Continued*)

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Table 2 (Continued).

Characteristics		Medication Self-Management		
		Mean±SD	t or F	*P* Value
Number of, complications				
	1	68.67±8.58	F=3.793	0.024
	2	66.37±8.95		
	≥3	64.37±10.88		
Number of medications currently taken				
	≤3	68.05±7.49	F=1.122	0.328
	4–6	67.31±9.52		
	≥7	65.66±10.31		
Times of medication use per day				
	1	71.63±5.95	F=3.197	0.024
	2	69.00±8.26		
	3	66.32±9.63		
	≥4	63.04±10.86		
Contact with health care providers				
	Yes	68.59±9.06	t=2.062	0.041
	No	65.79±9.67		
Barthel Index				
	Independence	69.62±7.00	F=27.228	<0.01
	Slightly dependent	64.70±9.90		
	Moderate dependence	52.76±9.72		
	Heavy dependence	47.50±10.61		
	Complete Dependence	0		

Correlation Between the Self-Efficacy for Appropriate Medication Use Scale, Medication Literacy and Medication Self-management Ability in Patients with Stroke

The mean scores of SEAMS, medication literacy and medication self-management behaviours for patients with stroke and their correlations are shown in Table 3. Correlation analysis showed that there was a positive correlation between SEAMS and medication literacy ($r = 0.824$, $p < 0.05$), SEAMS was positively correlated with medication self-management ability ($r = 0.845$, $p < 0.05$) and medication literacy was positively correlated with medication self-management ability ($r = 0.802$, $p < 0.05$).

Predictors of the Ability of Medication Self-Management Behaviours

The most important factors that influence the level of medication self-management in patients with stroke were explored. The total score of medication self-management was set as a dependent variable, while the SEAMS score, medication

Table 3 Correlation Between SEAMS, Medication Literacy, and Medication Self-Management in Stroke Patients (n=210, Mean ± SD)

	Mean±SD	SEAMS r (*p*-Value)	Medication Literacy r (*p*-Value)	Medication Self-Management (p-Value)
SEAMS	24.25±4.84	1		
Medication Literacy	6.31±4.57	0.824**	1	
Medication Self-management	66.71±9.55	0.845**	0.802**	1

Note: **p < 0.01.
Abbreviations: SEAMS, self-efficacy for appropriate medication use scale; SAM, self-administration of medication tool.

Table 4 Multiple Linear Regression Analysis of Medication Self-Management Behaviors in Stroke Patients

Variables	B	SE	β	t	*P*
(Constant)	41.895	4.162		10.065	<0.01
Barthe Index	−2.885	0.520	−0.207	−5.546	<0.01
SEAMS	1.029	0.120	0.522	8.589	<0.01
Medication Literacy	0.707	0.151	0.338	4.685	<0.01

Abbreviation: SEAMS, self-efficacy for appropriate medication use scale.

literacy score and factors with statistical significance in single factor analysis (age, level of education, occupation, annual income, type of medical insurance, living area, hospitalisation history, number of health problems, times of medication use per day, contact with health care providers and the BI) were taken as independent variables. Multiple linear regression analysis revealed that the BI, self-efficacy for using medication appropriately and medication literacy have a significant effect on medication self-management behaviours, as shown in Table 4.

Discussion

To the best of our knowledge, this cross-sectional study is the first to investigate medication self-management levels and their association with general demographics, SEAMS and medication literacy among Chinese patients with stroke. The results of this study provide valuable insights into factors influencing medication self-management in this specific patient population.

This study found that the overall levels of medication self-management were low in patients with stroke; 22.9% of the 210 sampled patients with stroke were unable to adequately manage their medications. According to one study,[34] the level of patients' perception and belief of their disease and its treatment are essential in the decision-making process of a patient's medication self-management behaviour. In addition, most patients experience passive caregiver medication schedules during hospitalisation, and as a result, patients are often not actively participating in managing their medications and do not fully understand what is needed.[7] This also limits the improvement of the level of medication self-management in patients with stroke.

This study found that patients with stroke with different demographic characteristics differed significantly in their level of medication self-management. Older patients had lower levels of medication self-management, which may be related to cognitive misconceptions about medication management in older adults; for example, they may have felt that missing a medication dose would not result in adverse effects.[35] Furthermore, we found that the type of health insurance is associated with the levels of medication self-management. This finding is consistent with other studies of chronic diseases, such as chronic heart failure and hypertension.[36,37] Easier and more convenient access to medical knowledge and resources for urban residents may explain the higher level of medication self-management among patients with stroke living in cities.[38]

Among disease-related factors, we found that the number of comorbidities is related to medication self-management behaviour. Previous studies have shown that complex disease conditions and polypharmacy negatively impact medication self-management behaviour.[39] Fatema et al found that patients were more likely to make medication errors with more outpatient visits, suggesting that outpatient and emergency or inpatient experience was an important risk factor for patients' drug self-management behaviour.[40] Consistent with the results of this study, this may be co-existent with other chronic diseases, such as hypertension and diabetes, and patients often go to the outpatient (or inpatient) clinic to adjust drugs due to blood pressure and blood sugar problems; this changes the type, dosage and frequency of drugs, increasing the difficulty of medication management for the patient. This study also showed that the daily medication frequency of patients affected their medication self-management behaviour. This may be related to the large number of medications taken by patients and the complexity of treatment regimens, which increases the difficulty of medication management.[41] In addition, we found that patients with a family doctor had better medication self-management. These results confirm that the primary care physician has an active role in the monitoring of health behaviours and the provision of medication instructions to the patient.[42] The ability to live independently is an important factor influencing medication self-management behaviour.

A possible explanation is that patients who can perform activities independently have good physical and psychological conditions; they can take care of themselves more autonomously and better understand their medications.[43]

This study also found that there was a positive correlation between the SEAMS, medication literacy and the total score for medication self-management. There have been no previous studies on the correlation between SEAMS and medication self-management behaviours in patients with stroke. In other areas of chronic disease, however, the association between these potential variables has been studied. Consistent with our results, Pan et al[20] studied hospitalised middle-aged and elderly patients with chronic comorbidities and showed that medication self-management behaviours were associated with patients' self-efficacy. In addition, the present study linked medication literacy and medication self-management behaviours for the first time and found that patients with higher medication literacy scores had higher levels of medication self-management. This can be explained by the fact that patients with high levels of medication literacy have a wide range of access to and understanding of medication information and have the skills needed to use drugs safely.[44]

Regression analysis showed that the BI, SEAMS and medication literacy scores were the most important predictors of medication self-management behaviours. This is in line with the results of a study on elderly patients,[45] which showed that self-efficacy has a positive predictive effect on medication self-management. Higher self-efficacy is believed to improve the patient's psychological condition, thus arousing the patient's motivation for medication self-management. This enables the patient to take the initiative to learn relevant medication knowledge and skills and actively participate in the medication management process.[20] Therefore, improving patients' self-efficacy can stimulate their willingness and motivation for medication self-management behaviour change; in this way, patients can actively adopt and adhere to health behaviours related to medication self-management. Medication management in patients with stroke is important to reducing the risk of stroke recurrence; therefore, improving the ability of medication self-management in patients with stroke is particularly crucial. In clinical nursing, nurses can use their communication skills to help patients with stroke develop confidence in managing medications, such as by performing motivational interviewing,[46] which can effectively alleviate patients' negative emotions about medications and build confidence in drug self-management.[47] In addition, we also need to strengthen the education of patients with stroke on medication-related knowledge and instruction on medication management skills,[17] such as customising cards with medication information, instructing patients to set alarms on cell phones or writing medication logs.

This study provides new insights into the factors that influence medication self-management in patients with stroke and highlights the importance of raising SEAMS scores and medication literacy in improving medication self-management ability. These findings suggest that targeted interventions focusing on improving self-efficacy and medication literacy could significantly improve medication self-management ability in patients with stroke.

However, there are some limitations to this study. First, the sampling and selection of the sample were performed using a single method, which may not be representative. In addition, this study was only conducted in Wuxi City, Jiangsu Province. Therefore, the generalisation of our results should be exercised with caution. Second, the survey collected information on patients' medications in the previous months, meaning the existence of meeting bias cannot be ruled out. Future research should expand the sample size to cover more regions and different types of medical institutions to enhance the representativeness and generalisability of the results. Longitudinal study designs are also recommended to better assess the changes in medication self-management over time and its long-term associations with clinical outcomes. Additionally, future studies could delve into the specific content and implementation effects of medication self-management interventions, particularly those conducted in community settings, to evaluate their feasibility and sustainability. Last, qualitative research is recommended to gain in-depth insights into patients' perspectives and experiences with medication self-management, which could inform the development of more targeted and personalised interventions.

Conclusion

This study found that there was a positive correlation between SEAMS, medication literacy and total scores of medication self-management, and that the BI, SEAMS and medication literacy scores were the most important predictors of medication self-management behaviour.

Data Sharing Statement

All data generated or analysed during this study are included in this article. Further enquiries can be directed to the corresponding author.

Ethics Approval and Consent to Participate

This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the affiliated hospital of Jiangnan University (Ethics Approval Number: LS2023063). Written informed consent was obtained from all participants.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

All of the authors had no any personal, financial, commercial, or academic conflicts of interest separately.

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