DOI: 10.53469/jcmp.2025.07(07).29

Influencing Factors of Home-based Rehabilitation in Rural Areas of Baise, Guangxi

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Abstract: ***Objective:*** *1) To investigate the status of home-based rehabilitation in patients with stroke in rural areas. 2) To analyze the correlation between the patients' social demographic data, disease-related data, neurological function, cognitive function, basic daily living activities, instrumental daily living activities, social support, and depression and the patients receiving home-based rehabilitation.* ***Methods:*** *Using a cross-sectional survey design, stroke patients from 12 counties (districts) in Baise, Guangxi, were conveniently selected from August 2021 to November 2021. Whether the participants received home-based rehabilitation was determined by whether they had received rehabilitation services from medical institutions or third-party institutions at their place of residence. Binary logistic multifaceted regression was used to analyze the factors affecting the participants' receipt of home-based rehabilitation at the test level (α = 0.05).* ***Results:*** *1) Among 271 rural stroke patients investigated, 39 cases had ever received home-based rehabilitation, and the rate was 14.4%. 2) The binary logistic regression results indicated that there were significant differences in the scores of the Social Support Scale and Hamilton Depression Scale between patients receiving home-based rehabilitation and those receiving home-based rehabilitation. 3) There are two themes: economic factors limit home-based rehabilitation, and negative emotions limit home-based rehabilitation.* ***Conclusion:*** *1) The rate of home-based rehabilitation for stroke patients in rural areas of Baise, Guangxi, is low. 2) Social support and depression were independent factors influencing the acceptance of home-based rehabilitation for stroke patients. Patients with good social support tended to receive home-based rehabilitation, and patients with depression had a lower rate of home-based rehabilitation.*

Keywords: Stroke, Home-based rehabilitation, Influencing factors, Social Support, Depression.

1. Introduction

Stroke is an acute cerebrovascular disease with high morbidity, recurrence, mortality, disability, and economic burden [1]. In China, there are 2 million new stroke patients every year; approximately 70%-80% of patients still have physical dysfunction after treatment and are unable to live independently [2]. However, 80% of patients' rehabilitation and nursing work are not the intervention of the medical staff, mostly because of the lack of family members' medical background [3]. This prevents patients from receiving professional and consistent care, and leaves them with many complications due to missed opportunities for recovery [4]. Home-based rehabilitation usually refers to medical institutions or third-party institutions providing rehabilitation services to patients in their family residence, which can effectively improve patients' quality of life and reduce the recurrence rate of stroke [5]. This study used home-based rehabilitation as a dependent variable to explore the correlation between patients' acceptance of home-based rehabilitation and various variables in their health status, body structure and function, environmental factors, and personal factors to explore the independent factors that affect stroke patients' acceptance of home-based rehabilitation.

2. Research Objects and Methods

2.1 Research Objects

With reference to the Guangxi Zhuang autonomous region, 12 counties and districts in the Baise disposable income situation [6] can be divided into three levels: at every level, it is convenient to extract a county, district, in the extraction of easy extraction of the county, district five towns (towns are all included in less than 5), and each town is convenient to extract 3–5 administrative villages, and cluster sampling villages all conform to the standard of cerebral apoplexy patients. Inclusion criteria: 1) Were diagnosed with stroke (stroke confirmed by connoisseurs MRI and/or CT examination in accordance with the revised diagnostic criteria of the Chinese Guidelines for the Diagnosis and Treatment of Acute ischemic Stroke) [7]. 2) The patient lived in the rural area of Baise City. 3) Patients living at home. 4) Patients voluntarily participated in this study with informed consent. The exclusion criteria were as follows: 1) patients complicated with serious heart, lung, liver, and renal dysfunction. 2) patients with subarachnoid hemorrhage and transient ischemic attack according to medical data. 3) patients with a history of dementia and other mental diseases after medical information or family consultation. 4) patients with brain tumors, encephalitis, meningitis, and other brain diseases.

2.2 Research Methods

Whether the subjects received home-based rehabilitation was defined by whether they had received rehabilitation services from medical institutions or third-party institutions at their place of residence. The Canadian neural function scale, simple intelligence test scale, improved pap index, functional activity questionnaire, social support rating scale, and Hamilton depression scale were used to evaluate neural function, cognitive function, basic and instrumental daily life activities ability, social support, and depression.

2.3 Statistical Analysis Methods

SPSS23.0 was used for Statistical analysis, and the count data were described as frequency and percentage. A chi-square test was used for comparison between groups, and variables P≤0.2

in the results were included in binary logistic regression to analyze the independent influencing factors of home-based rehabilitation. At the test level, $\alpha = 0.05$.

3. Results

A total of 271 rural patients with stroke were included in this study, including 166 males (61.3%) and 105 females (38.7%). The patients ranged in age from 34 to 90 years, including 139 patients (51.3%) aged from 34 to 59 years and 132 patients (48.7%) aged from 60 to 90 years. 39 patients (14.4%) received home-based rehabilitation, and 232 patients (85.6%) did not. Among the 39 patients who received home-based rehabilitation, the maximum number of rehabilitation sessions was 24, the minimum was 2, and the median was 4; the maximum duration of a single session was 4 h, the minimum was 1 h, and the median was 2 h. Total length of home-based rehabilitation was 96 h at most, 3 h at least, and 8 h at median. Among the types of home-based rehabilitation, 12 subjects received on-site guidance on occupational therapy, exercise therapy, or rehabilitation exercise from the medical staff of grade A hospitals, and 27 subjects received on-site guidance on rehabilitation exercises from community health service staff (township medical staff, village doctors, etc.). None of the subjects received rehabilitation training guidance from the online medical remote platform (excluding telephone follow-up), and none of the subjects stayed in rehabilitation institutions or communities with professional medical and rehabilitation qualifications.

The patients were divided into two groups based on whether they had received home-based rehabilitation. Chi-square test results indicated that there were no statistically significant differences in patients' gender, nationality, age, cultural degree, marital status, current job status, personal income, number of strokes, paralysis of limbs, Canadian Neurology Scale, Abbreviated Mental Test Score, and Activities of Daily Living between the two groups, and there were significant differences in the Social Support Rate Scale and Hamilton Rating Scale for Depression between the two groups. Table 1 presents the results. To avoid the elimination of potentially significant variables, factors $P \leq 0.2$ in the chi-square test were analyzed by binary logistic multi-factor regression analysis, including age, current job status, monthly income, FAQ score, SSRS score, and HRSD score. The assignment methods are listed in Table 2 and the results are listed in Table 3.

Table 1: Analysis of Differences in Home-based Rehabilitation status of subjects [n(%)]

Factors	Patients who did not receive home-based rehabilitation (*n*=232)	Patients who receive home-based rehabilitation (*n*=39)	χ^2 value	*P* value
Gender				
Male	143 (61.6)	23 (59.0)	0.100	0.752
Female	89 (38.4)	16 (41.0)		
Nationality				
Han	56 (24.1)	10 (25.6)	2.420	0.298
Zhuang	152 (65.5)	28 (71.8)		
Other Ethnic Groups	24 (10.3)	1 (2.6)		
Age (Years)				
<59	115 (49.6)	24 (61.5)	1.915	0.166
≥60	117 (50.4)	15 (38.5)		
Educational Background				
Primary School or Below	154 (66.4)	29 (74.4)	0.970	0.325
Middle School and Above	78 (33.6)	10 (25.6)		
Marital Status				
Mateless	57 (24.6)	11 (28.2)	0.235	0.628
Married	175 (75.4)	28 (71.8)		
Current Job Status				
Doing Nothing	118 (50.9)	15 (38.5)	2.054	0.152
Engage in One or More Activities	114 (49.1)	24 (61.5)		
Monthly Income (yuan)				
No Income	144 (62.1)	16 (41.0)	6.114	0.013
Regular Income	88 (37.9)	23 (59.0)		
Number of Strokes				
Once	188 (81.0)	32 (82.1)	0.023	0.881
Two or More Times	44 (19.0)	7 (17.9)		
Paralyzed Limb Condition				
No Paralysis	108 (46.6)	19 (48.7)	0.063	0.802
Paralysis	124 (53.4)	20 (51.3)		
Canadian Neurology Scale (CNS)				
1.5~7.5	120 (51.7)	18 (46.2)	0.415	0.520
8.0~8.5	112 (48.3)	21 (53.8)		
Abbreviated Mental Test (AMT)				
0~5	43 (18.5)	4 (10.3)	1.596	0.206
6~10	189 (81.5)	35 (89.7)		
Basic Activities of Daily Living (ADL)				
0~59	42 (18.1)	7 (17.9)	0.001	0.981
60~100	190 (81.9)	32 (82.1)		
Functional Activities Questionnaire (FAQ)				
0~4	121 (52.2)	25 (64.1)	1.918	0.166
5~30	111 (47.8)	14 (35.9)		
Social Support Rate Scale (SSRS)				
18~33	117 (50.4)	10 (25.6)	8.240	0.004
34~52	115 (49.6)	29 (74.4)		
Hamilton Rating Scale for Depression (HRSD)				
0	88 (37.9)	26 (66.7)	11.313	0.001

1~17	144 (62.1)	13 (33.3)

Table 2: Variable Assignment Table of Binary Logistic Regression Analysis

Variables	Assignment method
Age	Original value
Current Job Status	0=Doing Nothing; 1=Engage in One or More Activities
Monthly Income	0=No Income; 1=Regular Income
Functional Activities Questionnaire	0=5~30 points; 1=0~4 points
Social Support Rate Scale	0=18~33 points; 1=34~52 points
Hamilton Rating Scale for Depression	0=1~17points; 1=0 points
Whether to Receive Home-based Rehabilitation	0=No; 1=Yes

Table 3: Binary Logistic regression analysis

Factors	Waldχ^2	*P* value	OR value	95%CI
Age (Years)				
	-0.013	0.018	0.505	0.477
Current Job Status				
Doing Nothing			1.000	
Engage in One or More Activities	-0.244	0.486	0.253	0.615
Monthly Income (yuan)				
No Income			1.000	
Regular Income	0.507	0.466	1.184	0.277
Functional Activities Questionnaire (FAQ)				
0~4			1.000	
5~30	-0.180	0.440	0.167	0.683
Social Support Rate Scale (SSRS)				
18~33			1.000	
34~52	0.841	0.411	4.192	0.041
Hamilton Rating Scale for Depression (HRSD)				
0			1.000	
1~17	0.908	0.410	4.907	0.027

The study found that the P value of SSRS was 0.041, and the OR value suggested that patients with SSRS scores between 34 and 52 were 2.318 times more likely to receive home-based rehabilitation than those with SSRS scores between 18 and 33, and the P value of HRSD-6 was 0.027. The probability of receiving home-based rehabilitation was 2.478 times higher for stroke patients with an HRSD-6 score of 0 than for patients with an HRSD-6 score of 1-17. Studies have shown that the SSRS and HRSD-6 scores are independent influencing factors for stroke patients receiving home-based rehabilitation.

4. Discussion

In this study, the rate of patients receiving home-based rehabilitation was 14.4%, which directly reflects a low degree of home-based rehabilitation. It can be seen from the frequency, single time duration, and total time of patients receiving home-based rehabilitation that the frequency and time of home-based rehabilitation are shorter, and the time is short, without continuous and systematic rehabilitation. Among the patients receiving home-based rehabilitation, no subjects or their family members received "Internet+" rehabilitation exercise guidance from the online medical platform (excluding telephone follow-up), and no subjects were admitted to health care institutions or communities with professional medical and rehabilitation qualifications.

These two rehabilitation models have emerged and developed in China in recent years, but they have not been radiated to remote rural areas, and stroke patients have an extensive need for health education, daily life nursing, and rehabilitation nursing in the process of home-based rehabilitation [3]. These two rehabilitation models have emerged and developed in China in recent years, but they have not been radiated to remote rural areas, and stroke patients have an extensive need for health education, daily life nursing, and rehabilitation nursing in the process of home-based rehabilitation [8], which cannot meet patients' home-based rehabilitation needs. Currently, the shortage of human resources for rehabilitation and the development of relevant policies are the pain points of home-based rehabilitation [9]. Currently, there are only 0.4 rehabilitation therapists per 100,000 people in China [10], so the government should accelerate the integration of multiple disciplines and further expand the employment channels of rehabilitation-related personnel to meet the demand for the rehabilitation field [11]. According to the outline of the "Healthy Chinese 2030" Plan, the construction of rehabilitation medical institutions should be strengthened, and continuous rehabilitation medical services should be vigorously developed [12]. The National Nursing Development Plan (2016-2020) encourages the extension of nursing services to patients' communities and families, providing patients with various forms of continuous nursing services and ensuring the continuity of nursing services [13]. Therefore, in the future, we should strengthen the construction of community medical services and cultivate community health workers and human resources for rehabilitation so as to meet the needs of patients for continuous rehabilitation and care. At the same time, China should gradually explore the construction of the transitional service model of hospital-community alliance to promote the sinking of high-quality medical resources to communities and benefit patients.

The results of this study showed that social support and depression were independent influencing factors for home-based rehabilitation. Social support mainly affects the effects of rehabilitation training in patients with stroke. Good social support can help patients adopt positive coping styles [14], improve their physical and mental health, accelerate the rehabilitation process, and improve the effectiveness of rehabilitation [15]. The P value of the SSRS score was 0.041, and the OR value indicated that the probability of receiving home-based rehabilitation in patients with SSRS scores between 34 and 52 was 2.318 times that in patients with SSRS

scores between 18 and 33; that is, the probability of receiving home-based rehabilitation in patients with high social support was higher than that in patients with low social support. The incidence of post-stroke depression is 5%-54% [16]. Stroke patients with depression are under physical and mental pressure in the process of rehabilitation, and this poor psychological state affects the repair of neurological function and the rehabilitation process [17]. Many domestic and foreign studies have shown that depression is one of the main factors affecting rehabilitation outcomes in stroke patients [18, 19]. Decreased self-care ability, increased dependence on caregivers, and perception of being a burden are also possible causes of depression [20]. The study showed that the probability of home-based rehabilitation of stroke patients without depression was 2.478 times that of patients with depression; that is, the home-based rehabilitation rate of patients with depression was lower. A possible reason is that patients with depression have lower rehabilitation compliance, which affects the treatment and rehabilitation effect of patients [21].

Neurological function and activities of daily living were not significantly different between patients who received home-based rehabilitation and those who did not, or the researchers failed to define the frequency and duration of home-based rehabilitation when including patients who received home-based rehabilitation in this study. In addition, this study included a few variables and a small sample size, and the survey area was limited to rural Baise City, Guangxi. In the future, we will clarify the concept and inclusion criteria of home-based rehabilitation and strive to include more variables, larger samples, and more centers in the study to make the study results more reliable.

Funding Statement

This work was supported by 2023 Guangxi University Young and Middle-aged Teachers' Basic Scientific Research Capacity Improvement Project (grant number: 2023KY0562, 2023KY0569) and 2023 Master's Degree Graduate Teaching Case Construction Project of Youjiang Medical University for Nationalities (grant number: YLK2023005).

References

[1] WANG L, LIU J, YANG Y, et al. The Prevention and Treatment of Stroke Still Face Huge Challenges —Brief Report on Stroke Prevention and Treatment in China, 2018 [J]. Chinese Circulation Journal, 2019, 34(02): 105-119.

[2] Zhang Q, Feng H, Wang Y, et al. Investigation on continuous rehabilitation nursing needs of family caregivers of elderly stroke patients [J]. Chinese General Practice Nursing, 2019,17(32): 4074-4078.

[3] Zhang X, Xu J, Su Y, et al. Study on transitional care needs of first new-onset stroke patients and health education strategies [J]. Chin J Nurs Educ, 2012,09(7): 294-296.

[4] Long W, Zhang J. Influence of comprehensive rehabilitation nursing training combined with continuity of care on home quality of life and ability of daily living patients with ischemic stroke [J]. Chinese Nursing Research, 2017,31(20): 2456-2461.

[5] Hou Y, Guo L, Yin S, et al. Effects of home-based entertaining and intelligent rehabilitation training on upper limb dysfunction after stroke [J]. Chinese Journal of Rehabilitation Medicine, 2020,35(11): 1338-1341.

[6] Table of per capita disposable income of Baise City residents in 2021 - Progress data of Baise City - People's government portal of Baise, Guangxi - www.baise.gov.cn [EB/OL]. [2022/8/31]. http://www.baise.gov.cn/zwgk/jcxxgk/sjfb/bssjdsj/t11225960.shtml.

[7] Peng B, Wu B. interpretation of the Chinese guidelines for diagnosis and treatment of acute ischemic stroke 2018 [J]. Chinese Journal of Neurology, 2018,51(09): 666-682.

[8] Deng Y. Construction and application of comprehensive information service cloud platform for stroke continuing care [J]. Journal of Nursing (China), 2019,26(19): 50-52.

[9] Ji L, Deng W, Huang Q, et al. Status of stroke home-based rehabilitation in developed countries and its enlightenment to China [J]. China Medical Herald, 2021,18(36): 165-168.

[10] Gao B, Cui S, Zhang X, et al. Nursing status of stroke patients in rehabilitation period in community nursing institutions [J]. Journal of Qilu Nursing, 2017,23(20): 69-71.

[11] Ye H. Analysis on the Development Environment and Development Strategy of Medical Care and Tourism Complex Based on PEST-SWOT Matrix Paradigm [J]. Journal of Jinhua Polytechnic, 2019,19(02): 25-30.

[12] The CPC Central Committee and The State Council issued the Outline of the "Healthy China 2030" Plan - Rolling news - the website of the Central People's Government of the PRC [EB/OL]. [2022/8/31]. http://www.gov.cn/xinwen/2016-10/25/content_5124174.htm.

[13] National Nursing Development Plan (2016-2020) - National Development and Reform Commission [EB/OL]. [2022/8/31]. https://www.ndrc.gov.cn/fggz/fzzlgh/gjjzxgh/201707/t20170720_1196854.html?code=&state=123.

[14] Wu X. Correlation analysis of social support, psychological resilience and coping style of the caregivers of stroke patients [J]. Nursing Practice and Research, 2020,17(11): 30-32.

[15] Cao H, Meng X, Zeng H, et al. Influencing Factors of Family Rehabilitation in Stroke Patients with Hemiplegia [J]. Heilongjiang Medical Journal, 2018, 42(5): 483-487.

[16] KUMAR R, KATARIA N, KUMAR N, et al. Poststroke depression among stroke survivors in Sub-Himalayan region [J]. J Family Med Prim Care, 2020,9(7): 3508-3513.

[17] ALGHWIRI A A. The Correlation between Depression, Balance, and Physical Functioning Post Stroke [J]. J Stroke Cerebrovasc Dis, 2016,25(2): 475-479.

[18] de GRAAF J A, SCHEPERS V, NIJSSE B, et al. The influence of psychological factors and mood on the course of participation up to four years after stroke [J]. Disabil Rehabil, 2020: 1-8.

[19] TAYLOR-PILIAE R E, HEPWORTH J T, COULL B M. Predictors of depressive symptoms among community - dwelling stroke survivors [J]. J Cardiovasc Nurs, 2013, 28(5): 460-467.

[20] Wei h, Yao X. Research progress on influencing factors of quality of life in stroke patients with hemiplegia [J]. Chinese Journal of Integrative Medicine on Cardio - Cerebrovascular Disease, 2020,18(14): 2268-2273.
[21] Zhang L. Regression analysis of related factors affecting the prognosis of stroke patients [D]. China Medical University, 2021.