ORIGINAL RESEARCH

Analysis of the Current Situation and Influencing Factors of Coping Styles in Ischemic Stroke Patients

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ABSTRACT

Objective • To explore the current situation and influencing factors of coping styles in ischemic stroke patients.

Methods • 250 ischemic stroke patients admitted to our hospital from September 2019 to September 2021 were selected as the study subjects to obtain the general information of patients, and the corresponding indexes of patients were evaluated by the method of document investigation to analyze the current situation and influencing factors of coping styles in ischemic stroke patients.

Results • Under stressful conditions, patients with no dependence on life-support level, without anxiety and

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INTRODUCTION

Ischemic stroke refers to cerebral blood insufficiency or circulation disturbance caused by various reasons.¹ According to statistics, the disease is common in the elderly population over 60 years of age, and the incidence of stroke is increasing in low- and middle-income countries in recent years. In terms of mortality among stroke patients globally, developing countries account for 84.9% of deaths. Among the leading causes of cerebrovascular diseases, cerebral infarction accounts for about 69%-79% of the cases.² With the aging global population, the incidence of stroke among countries is also gradually increasing. Liu et al.³ have reported that the incidence of stroke in France is 113/lakh and that in Saudi Arabia is 185/ lakh, which are countries with relatively low incidences in the depression, enjoying a high quality of life, and with high self-efficacy were more likely to adopt the positive coping styles (P < .05). Logistic regression analysis showed that infarction area, life-support level, and self-efficacy were independent risk factors for coping style in patients with ischemic stroke (all P < .05).

Conclusion • Ischemic stroke patients tend to adopt negative coping styles. Infarction area, life-support level, and self-efficacy of ischemic stroke patients are found to be the main factors affecting their coping styles. (*Altern Ther Health Med.* 2023;29(8):461-465).

world. Brunssen et al.4 have pointed out that the incidence of stroke in Germany is 349 /lakh, and the incidence of stroke in Britain, Italy, and the United States is 2.9%. Meanwhile, the statistics in Asian and African countries are also not optimistic. Related literature has pointed out that the incidence of stroke in China records an annual increase of 6.49%, with an overall upward trend.⁵ Brugnara et al.⁶ have shown that stroke has become the most important cause of disability and death for domestic residents, and the mortality is 3.49 times higher in Japan, while it is 3.99-4.98 times higher in European and American countries. Among them, the physical disability caused by stroke accounts for 19.9% of all patients with physical disability and is the primary cause of physical disability.7 Although the need for prevention and treatment of ischemic stroke has gained medical attention, there is no specific or satisfactory treatment so far, and the ischemic stroke-related sequelae like limb dysfunction, intellectual disability, and disease recurrence still bring serious economic burden and psychological pressure to the families of patients.

Coping style refers to the individual's attempt to consciously reduce the negative emotions brought about by stressful events when facing illness or other stressful events, and to enhance his/her ability to deal with the stressful events. Upon investigating the quality of life in ischemic stroke patients, Liu Song et al.⁸ have found that patients' quality of life is significantly decreased, manifested as a comprehensive decline. The reason may be that the four

dimensions of role emotional (RE), social function (SF), physical function (PF), and role physical (RP) in patients with ischemic stroke may be prone to negative coping styles affected by the disease. The coping style of patients is also related to mental health. Negative coping has a negative effect on mental health. At the same time, such patients face the negative impact of the disease for a long time and do not actively cooperate with relevant treatment, which leads to the spread of the disease and increases the risk of death. At present, some studies have confirmed that ischemic stroke affects patients' social and emotional functions, which implies that ischemic stroke as a stress source significantly influences individual psychology and physiology.9 Therefore, this study investigated the current situation and influencing factors of coping styles in ischemic stroke patients, to provide a basis for clinical nursing staff to help ischemic stroke patients establish healthy coping styles.

MATERIALS AND METHODS

General information

250 ischemic stroke patients admitted to our hospital from September 2019 to September 2021 were selected as study subjects, and this study was in line with the Declaration of Helsinki (2013).¹⁰

Recruiting of study subjects

Inclusion criteria. (1) Patients met the diagnostic criteria of ischemic stroke¹¹ and were confirmed by craniocerebral MRI/CT. (2) Patients had no communication disorders and no significant cognition disorders such as memory, orientation, and understanding. (3) Patients had stable vital signs and no other serious neurological diseases. (4) Patients and their families who were aware of the purpose, process, and potential risk signed the informed content. (5) The course of patients exceeded 7 days.

Exclusion criteria. (1) Patients with consciousness disorders such as faintness, drowsiness, and lethargy. (2) Patients who could not cooperate with others due to systemic weakness or other conditions. (3) Patients with critical disease or rapid deterioration. (4) Patients with the severe somatic disease. (5) Patients with disease in important organs like heart, liver, and kidney or malignant tumor.

Methods

General and clinical information. The general information and clinical information of 250 ischemic stroke patients were collected, and the general information included age, gender, education level, occupation, marital status, personal monthly income, and place of residence, while the clinical information included the infarction location, infarction area, morbidity frequency, activities of daily living, and the number of complications (including heart disease, diabetes mellitus, and hypertension) from the inpatient medical records.

Evaluation of coping styles. The coping style scale (JCS-60)¹² was used to evaluate the coping styles of patients, with

8 dimensions and a total of 60 coping strategies, including objectivity (9 items), fatality (4 items), brave confronce (10 items), escape (13 items), emotional catharsis (5 items), palliation (7 items), seeking help (5 items) and self-reliance (7 items). Each coping strategy was scored according to 0 (no), 1 (rarely), 2 (sometimes), and 3 (often) points, with a total score of 180 points. In this experiment, a JCS-60 score \geq 100 points was defined as a tendency to positive coping, and a score < 100 points was defined as a tendency to negative coping.

Evaluation of life-support level. The activities of daily living in patients were evaluated by the Barthel index (BI) rating scale,¹³ and the items were divided into clothing, decoration, eating, bathing, going to the toilet, walking (45 m above the ground), climbing up and down stairs, bed-chair transfer, etc. The score interval of this scale was 0-100 points and divided into 4 grades, including no dependence when the score exceeded 99 points, mild dependence (patients who could independently complete some daily activities with some help) when the score exceeded 61 points, moderate dependence (patients who could complete daily activities with the help of others) when the score was 41-60 points, and severe dependence (patients who could not complete most daily activities or needed the service of others completely).

Evaluation of quality of life. The stroke-specific quality of life scale (SS-QOL)¹⁴ was used to evaluate the patients' quality of life. The scale had 12 dimensions and 49 items, covering all fields of psychological, physiological, and social functions of stroke patients. The five-level scoring system (1-5 points) was adopted, and the score was 49-245 points. The higher the overall score, the better the quality of life in patients. In this study, SS-QOL score \geq 120 points was defined as high quality of life, and < 120 points was defined as low quality of life.

Evaluation of anxiety-depression emotion. The anxiety, depression, and overall psychological status of the patients were evaluated by the mental status scale in non-psychiatric settings (MSSNS).¹⁵ The scale adopted a four-point method with 38 items and a total score of 4-152 points, including (score 1) no or few; (score 2) sometimes; (score 3) often; and (score 4) always. A higher score indicated that the patients had a higher reflection intensity in emotion. In this study, the total score of MSSNS \geq 60 points was defined as anxiety and depression, and the total score < 60 was defined as no anxiety and depression.

Evaluation of self-efficacy. The general self-efficacy scale (GSES)¹⁶ was used to evaluate the self-efficacy of patients between the two groups, with 10 items and 1-4 points for each item. For each item, the subjects answered 'completely incorrect', 'somewhat correct', 'mostly correct', or 'completely correct' according to their actual situation, representing a score of 1, 2, 3, and 4 points, respectively. The higher the total score, the higher the self-efficacy. In this experiment, a GSES score \leq 18 points was defined as low self-efficacy, and a score > 18 was defined as high self-efficacy.

Diagnostic criteria of complications in patients. (1) Diagnosis of heart disease. Patients having drug therapy for

heart disease at present or previous history of heart disease. (2) Diagnosis of hypertension. Patients having antihypertension treatment, blood pressure $\geq 160 \text{ mmHg}$ (systolic pressure) or $\geq 95 \text{ mmHg}$ (diastolic pressure) measured three times after admission, or had a previous history of hypertension. (3) Diagnosis of diabetes mellitus. Patients having anti-diabetic medications, an index of fasting blood glucose $\geq 7.0 \text{ mmol/L}$ after admission, or a previous history of diabetes mellitus. (4) Brain infarction area. The scanning of magnetic resonance diffusion-weighted imaging was performed, and the brain infarction area was measured and calculated according to the ImageJ software (If there are multiple lesions, the sum values were considered as the final area).

Measurement criteria. In the method of Takagi,¹⁷ the cerebral infarction was divided into massive cerebral infarction (>50 mm²), middle cerebral infarction (10-50 mm²), and small cerebral infarction (<10 mm²) according to the different infarction area.

Observation indices. The general information and clinical information of patients were collected to analyze the current situation and factors influencing the coping styles in ischemic stroke patients.

Statistical analysis

The Statistical Product and Service Solutions (SPSS) 21.0 software (IBM, Armonk, NY, USA) was used to process and analyze the experimental data in statistics. The study data including enumeration data and measurement data were tested by χ^2 and *t* test, indicated by [n (%)] and ($\overline{x} \pm s$), and the logistic regression was used to analyze the influencing factors of coping styles in ischemic stroke patients. When *P* < .05, the differences were considered to be statistically significant.

RESULTS

Effect of general information on coping styles of ischemic stroke patients

See details in Table 1.

Effect of clinical information on coping styles of ischemic stroke patients

See details in Table 2.

Effects of life-support level, quality of life, psychological states, and self-efficacy on coping styles of ischemic stroke patients

Under stress conditions, patients with no dependence on life-support level, high quality of life, no anxiety and depression, and high self-efficacy were more likely to adopt the positive coping styles (P < .05). See details in Table 3.

Results of multivariate logistic analysis on influencing factors of coping styles in ischemic stroke patients

Logistic regression analysis showed that infarction area, life-support level, and self-efficacy were independent risk factors for coping style in patients with ischemic stroke (all P < .05), as shown in Table 4 and Table 5.

Table 1. Effect of General Information on Coping Styles ofIschemic Stroke Patients [n (%)]

	Number of cases who tended to positive coping	Number of cases who tended to negative coping		
Projects	(n = 117)	(n = 133)	<u>χ</u> ²	P value
Age			46.523	<.001
>60 years old	90 (76.92%)	45 (33.83%)		
≤60 years old	27 (23.08%)	88 (66.17%)		
Gender			0.009	.925
Male	60 (51.28%)	69 (51.88%)		
Female	57 (48.72%)	64 (48.12%)		
Education level			13.765	<.001
High school and above	75 (64.10%)	54 (40.60%)		
Secondary school and below	42 (35.90%)	79 (59.40%)		
Occupation			22.267	<.001
Mainly intellectual work	84 (71.79%)	56 (42.11%)		
Mainly physical work	33 (28.21%)	77 (57.89%)		
Marital status			22.515	<.001
Married	85 (72.65%)	57 (42.86%)		
Divorced/Widowed	32 (27.35%)	76 (57.14%)		
Personal month income			28.845	<.001
>2000 yuan	87 (74.36%)	54 (40.60%)		
≤2000 yuan	30 (25.64%)	79 (59.40%)		

Table 2. Effect of Clinical Information on Coping Styles ofIschemic Stroke Patients [n (%)]

	Number of cases	Number of cases		
	who tended to	negative coping		
Projects	(n = 117)	(n = 133)	v ²	P value
Infarction location	()	()	27.909	<.001
Left cerebral hemisphere	23 (19.66%)	67 (50.38%)		
Right cerebral hemisphere	38 (32.48%)	35 (26.32%)		
Bilateral cerebral hemisphere	56 (47.86%)	31 (23.31%)		
Infarction area			64.554	<.001
Large area	35 (29.91%)	9 (6.77%)		
Middle area	57 (48.72%)	29 (21.80%)		
Small area	25 (21.37%)	95 (71.43%)		
Morbidity frequency			9.895	.007
First time	73 (62.39%)	103 (77.44%)		
2 times	20 (17.09%)	20 (15.04%)		
≥3 times	24 (20.51%)	10 (7.52%)		
ADL score			15.705	<.001
No dependence	18 (15.38%)	48 (36.09%)		
Mild dependence	32 (27.35%)	36 (27.07%)		
Moderate to severe dependence	67 (57.26%)	49 (36.84%)		
Number of complications			28.395	<.001
0	37 (31.62%)	20 (15.04%)		
1	9 (7.69%)	44 (3.08%)		
2	37 (31.62%)	42 (31.58%)		
3	34 (29.06%)	27 (20.30%)		

Table 3. Effects of Life-Support Level, Quality of Life, Psychological States and Self-Efficacy on Coping Styles of Ischemic Stroke Patients [n (%)]

Projects	Number of cases who tended to positive coping (n = 117)	Number of cases who tended to negative coping (n = 133)	y ²	P value
Life-support level			52.807	<.001
No dependence	55 (47.01%)	22 (16.54%)		
Mild dependence	46 (39.32%)	36 (27.07%)		
Moderate to severe dependence	16 (13.68%)	75 (56.39%)		
Quality of life			18.954	<.001
High	78 (66.67%)	52 (39.10%)		
Low	39 (33.33%)	81 (60.90%)		
Psychological states			33.167	< 0.001
No anxiety and depression	84 (71.79%)	47 (35.34%)		
Anxiety and depression	33 (28.21%)	86 (64.66%)		
Self-efficacy			15.497	<.001
High	63 (53.85%)	39 (29.32%)		
Low	54 (46.15%)	94 (70.68%)		

Table 4. Description of Assignment of Factors AffectingCoping Style of Patients With Ischemic Stroke

Factors	Variable names	Description of assignment	
X1	Education level	High school and above = 0, secondary school and below = 1	
X2	Infarction area	Large area = 0, middle area = 1, small area = 2	
X3	Life-support level	No dependence = 0, mild dependence = 1,	
		moderate to severe dependence = 2	
X4	Quality of life	High = 0, $low = 1$	
X5	Psychological states	No anxiety and depression = 0, anxiety and depression = 1	
X6	Self-efficacy	High = 0, low = 1	
Y	Coping styles	Positive coping = 0, negative coping = 1	

Table 5. Results of Multivariate Logistic Analysis onInfluencing Factors of Coping Styles in Ischemic StrokePatients

Variables	β	Wald	P value	OR	95% CI
Education level	-20.763	0.000	.999	0.000	0.000
Infarction area	1.742	14.132	.000	5.710	2.302-14.163
Life-support level	1.573	14.010	.000	4.823	2.116-10.994
Quality of life	-0.072	0.000	1.000	0.931	0.000
Psychological states (anxiety and depression)	20.027	0.000	.999	498526413.7	0.000
Self-efficacy	-2.444	13.164	.000	0.087	0.023-0.325

DISCUSSION

According to the relevant literature, about 4/5 of survivors with ischemic stroke lose different degrees of labor ability, resulting in hypophrenia, hemiplegia, contracture, joint stiffness, and other sequelae, which leads to the difficulty for patients to carry out their daily life smoothly, thereby increasing the physical and mental pressure among patients, thereby seriously affecting the prognosis, and bringing a heavy burden to the family of such patients.¹⁸ Liu et al.¹⁹ have pointed out that clinics should not only focus on the impacts of ischemic stroke on the patient's body but also pay more attention to the psychological impact on the patient according to the observation of current medical study mode. Ischemic stroke disease is a source of stress, and the changes in the coping styles of patients can be achieved by paying attention to the psychological states of patients, and these changes can affect the prognosis and rehabilitation of patients to a significant extent. Relevant literature has pointed out that a positive coping style can significantly improve the negative emotions of patients and help them maintain a good coping state, while negative coping style can adversely affect stress response, and is therefore, not conducive to the prognosis of patients.²⁰ According to Jiang et al.²¹, the quality of daily life decreases gradually, and the activity ability is severely limited after patients have an ischemic stroke, especially for patients with self-care deficits. It is difficult for patients to maintain healthy behavior, resulting in greater psychological pressure and more negative emotions, which can bring serious economic burden to patients and families. At the same time, Wang et al.²² have pointed out that the quality of life in patients with malignant tumors was positively correlated with positive coping styles, and inversely correlated with negative coping styles. Interestingly, it is found that paralytic patients have a better quality of life and recovery ability when patients adopt positive coping styles such as cooperation during diagnosis and medical investigation.. Ischemic stroke is a negative life event, which can lead to cognitive impairment and physical dysfunction of patients, resulting in adverse emotions such as anxiety and depression. From the above studies, it can be found that diseases, as a source of pressure, will directly affect individual coping styles, and the coping styles are significantly related to the rehabilitation of a patient. Thus, changes in the coping styles of ischemic stroke patients after illness are of utmost importance.

According to the results of this study, the number of ischemic stroke patients adopting negative coping is higher than those adopting positive coping, which is consistent with the findings of Slenders et al.²³ The attitude of avoidance or giving up which is adopted by patients in times of stressful events and hazards may reduce their stress coping ability to a certain extent. These patients evaded or dodged the physical and mental damage caused by the disease by distracting their attention, not discussing the issue, and not contacting others, which is similar to the denial mode encountered in the psychological defense mechanism.

Patients who have a higher education level are more inclined to adopt an active coping style as suggested by the majority of the studies. Zhong et al.²⁴ have reported that gastric cancer chemotherapy patients with higher educational backgrounds are inclined to adopt positive coping styles, and our findings are consistent with this argument. At the same time, the results of this study showed that under stressful conditions, patients with no dependence on life-support, enjoying a high quality of life, no anxiety and depression, and with high self-efficacy were more likely to adopt the positive coping styles (P < .05). This indicates that patients with milder diseases would adopt a variety of positive ways to face the disease. In addition, in this study, the infarction area, lifesupport level, and self-efficacy were independent risk factors for coping style in patients with ischemic stroke (all P < .05), indicating that ischemic stroke patients were affected by many factors. Sagris et al.²⁵ have found that daily life-support level is the main factor affecting the coping styles of ischemic stroke patients. The multiple stepwise regression analysis results showed that self-efficacy is the main factor affecting the coping styles of ischemic stroke patients and is also the factor promoting positive coping styles. At the same time, multivariate analysis showed that anxiety and depression were the factors promoting the adoption of negative coping styles among patients; those with more serious anxiety and depression are more inclined to adopt negative coping styles. Therefore, the coping styles of ischemic stroke patients should be highly emphasized in clinical nursing, and the nursing work could be strengthened especially for patients with negative coping styles, to improve their prognosis. The contribution of this study is noteworthy. The coping styles of 250 patients with ischemic stroke were evaluated by investigating documents, providing evidence-based proof for formulating follow-up clinical intervention programs, which has a broad implication for clinical nursing practices of ischemic stroke patients from which patients and their families could benefit, and also benefit the overall healthcare system.

There are several complexities in this study protocol. Since humans are the study subjects, this protocol will face humanistic, social, and ethical challenges during the implementation process, which makes it even more complex and difficult than executing laboratory research. The shortcomings of this study are as follows. The sample size included in this study is small due to the limitations of relevant conditions, and the sample sources were limited, with the lack of representativeness. In addition, this study used different scales for evaluating the coping styles of patients in clinic. The subjectivity and intention of patients while answering the questions are likely to influence the study outcomes to a certain. Therefore, it is necessary to improve the study design and particularly explore the current situation and influencing factors of coping styles in ischemic stroke patients from multiple perspectives and aspects in the future.

CONCLUSION

In summary, ischemic stroke patients tend to adopt negative coping styles. Infarction area, life-support level, and self-efficacy of ischemic stroke patients are found to be the key factors affecting their coping styles. This study provides guidance for clinical intervention.

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AUTHOR DISCLOSURE STATEMENT

The authors do not have Conflicts of Interest to declare. All authors read and approved the final manuscript.

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MD and QL designed the study and performed the experiments, YM and YL collected the data, LZ and WL analyzed the data, and MD prepared the manuscript.

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