

Relationship Between Social Support and Psychological Resilience of Patients with Convalescent Stroke: Mediating Effect of Self-Efficacy

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Abstract

Objectives: To explore the relationship among psychological resilience, social support and self-efficacy of patients with convalescent stroke. **Methods:** From May 1 to December 31 in 2019, a total of 288 patients with convalescent stroke were investigated with the Social Support Rating Scale(SSRS), Stroke self-efficacy questionnaire (SSEQ), Connor-Davidson resilience scale (CD-RISC) and the general information questionnaire. Correlation analysis and mediating effect analysis were done. **Results:** The scores of social support, self-efficacy, psychological resilience are (34.25±5.95), (60.28±13.11) and (61.90±13.84), respectively. Psychological resilience is shown to be significantly correlated with social support ($r=0.778$, $P<0.01$) and self-efficacy ($r=0.750$, $P<0.01$). Self-efficacy had an incomplete mediating effect between social support and psychological resilience, and the mediation ratio was 53.30%. **Conclusions:** There is a positive correlation between social support, self-efficacy and psychological resilience in patients with convalescent stroke. Self-efficacy plays a part of mediating role between social support and psychological resilience.

Keywords

Stroke, Social Support, Self-efficacy, Psychological Resilience

1. Introduction

The World Stroke Organization (WSO) released a report in 2019 globally showing currently more than 80 million stroke patients, and more than 13.7 million new stroke patients occur each year [1]. In China, 80% of stroke patients have serious sequelae, i.e., physical activity disorder, unclear speech, etc, and the disability rate is as high as 75%. As a result, the self-care ability of some patients is constantly reduced or even lost [2, 3]. Psychological resilience is a positive quality in personality traits. A higher level of psychological resilience is conducive to improving the ability of patients to solve problems and avoid fear, sadness or other bad emotions [4]. Social support can providing spiritual and material support can not only improve the individual's coping ability, but also effectively reduce the negative impact of stressful events on individuals. Self-efficacy is a key factor for

stroke patients to face traumatic events and adverse outcomes [5]. This study analyzed the relationship among psychological resilience, social support and self-efficacy of patients with convalescent stroke, which helps clinical medical staff pay attention to the physiological and psychological health needs of patients with convalescent stroke and take corresponding nursing intervention measures, so as to improve the physical and mental health of patients.

2. Objects and Methods

2.1 Objects of Study

The study used a convenient sampling method. Patients were recruited by Shaanxi Province Hospital of traditional Chinese medicine, from May 1 to December 31 in 2019. Inclusion criteria were: ① refer to the diagnostic criteria of the fourth national cerebrovascular disease, and brain magnetic resonance imaging (MRI) or computed tomography (CT) confirmed as cerebral apoplexy [6]; ② age of ≥ 18 years; ③ clear consciousness and patients can use language or text communication; ④ duration of disease within 2 weeks to 6 months. Exclusion criteria were: ① comorbid major diseases, such as malignant tumors; ② persons with a history of mental illness or undergoing psychotherapy; ③ blind, deaf, aphasia patients; ④ participate in other research projects at the same time. Informed consent was obtained from the patients who agreed to participate in the study. This study is approved by the Shaanxi Province Hospital of traditional Chinese medicine Institutional Review Board.

2.2 Methods

2.2.1 Research tools

(1) General information questionnaire

The general information questionnaire is mainly used to investigate the general demographic data and analyze the basic information of patients with convalescent stroke. Including gender, age, marital status, education level, type of stroke and stroke severity, etc. The severity of stroke is assessed by the Modified Barthel Index (MBI) scale, which included 10 items with a total score of 100. The lower the score is, the more severe the disability is. $MBI < 95$ is defined as post-stroke disability, where $MBI \leq 20$ is classified as complete disability, 21~40 is severe disability, 41~60 is moderate disability, 61~94 is mild disability. While $MBI \geq 95$ is classified as without disability means that the daily self-care ability is completely independent. In the current study, the Cronbach's α values was 0.870 with good reliability.

(2) Connor-Davidson resilience scale (CD-RISC)

The CD-RISC developed by Dr Connor and Dr Davidson [7] and was translated in China by Yu [8], containing 25 items and three dimensions, which are the tenacity dimension, the self-improvement dimension and the optimistic dimension respectively. The total score ranged from 0 to 100. The higher the score, the greater the psychology resilience the subjects, the Cronbach's α values was 0.91. In our current study, the Cronbach's α values of CD-RISC was 0.804 showing high reliability.

(3) Social Support Rating Scale (SSRS)

The SSRS developed by Xiao [9] and used to evaluate social support, containing 10 items and three dimensions, respectively is the objective support dimension, the subjective support dimension and the support utilization dimension. The total score is 66. Scale with < 22 means low social support degree, among 23 ~ 44 means average social support degree, and > 45 means high social support degree. The questionnaire was of great reliability, the Cronbach's α values was 0.89~0.94. In this study, the Cronbach's α values of SSRS was 0.818.

(4) Stroke self-efficacy questionnaire (SSEQ)

The SSEQ developed by American economist Jones et al. [10] and was translated in China by Li [11], containing 11 items and two dimensions, the daily living dimension and Self-management dimension, respectively. The score ranges from 0 to 110. The higher the scores, the better the level of rehabilitation self-efficacy of the subjects. The Cronbach's α values was 0.969. In current study, the Cronbach's α values of SSEQ was 0.869.

2.2.2 Methods of investigation

Before the formal investigation, explain the purpose and significance of this research have been illustrated to the department director and department head nurse of the hospital to obtain their consent and support. The investigators selected patients with convalescent stroke and gave them one-to-one guidance to explain the

significance of the study and precautions. After signing the informed consent, the patients took about 15 to 20 minutes to fill the questionnaire. Then, the questionnaire is collected on the spot and the quality of its contents is checked to ensure data accuracy. A total of 300 questionnaires were distributed, and 288 surveys were included in the data analysis after excluding questionnaires with invalid data. The recovery rate was 96%.

2.2.3 Data analysis

In this study, SPSS 19.0 software was used for data analysis. Mean and standard deviation (SD) were used to describe the quantitative data and the qualitative data was represented by case number and percentage description. Spearman correlation test was used to discuss the relationship among social support, self-efficacy and psychological resilience and the mediating effect of self-efficacy which was also verified by using AMOS21.0 software.

3. Results

3.1 General information

The general demographic data of the patients were gender, age, marital status, educational level, residence, work status, medical expenses, type of stroke, time of stroke, stroke severity (Table 1).

Table 1. General demographic data (N=288)

Items	Group	Frequency(<i>n</i>)	Proportion(%)
Gender	Man	165	57.3%
	Woman	123	42.7%
Age	<45	50	17.4%
	45~59	93	32.3%
	>59	145	50.3%
Marital status	Unmarried	13	4.5%
	Married	217	75.3%
	Divorce	32	11.1%
	Widowed	26	9.0%
Educational level	Elementary and below	22	8.0%
	Junior middle school	55	19.1%
	High school	108	37.2%
	College or higher	103	35.8%
Residence	City	243	84.4%
	Countryside	45	15.6%
Work status	On the job	90	31.3%
	Retire	122	42.4%
	Jobless	76	26.4%
Medical expenses	Self-paying	15	5.2%
	public expense	25	8.7%
	Health insurance	248	86.1%
Type of stroke	Cerebral infarction	196	68.1%
	Cerebral hemorrhage	83	28.8%
	Mixed	9	3.1%
Time of stroke	2 weeks~1 months	85	29.5%
	1 months~3 months	73	25.3%
	3 months~6 months	130	45.1%
Stroke severity	Complete disability	15	5.2%
	Severe disability	116	40.3%
	Moderate disability	123	42.7%
	No disability	34	11.8%

3.2 Scores of social support, self-efficacy and psychological resilience in patients with convalescent stroke

The results of this survey show that the total score of social support for patients with convalescent stroke is (34.25±5.95), the total score of self-efficacy is (60.28±13.11), and the total score of psychological resilience is (61.90±13.84), which are show in Table 2.

Table 2. Scores of social support, self-efficacy and psychological resilience(n=288,M±SD)

Variables	Each dimension	Score (M±D)
Social support	Total score	34.25±5.95
	Subjective support	8.97±2.57
	Objective support	17.82±4.12
	Support utilization	7.46±2.03
Self-efficacy	Total score	60.28±13.11
	Daily living	35.04±8.94
	Self-management	25.20±7.95
Psychological resilience	Total score	61.90±13.84
	Tenacity	30.51±9.94
	Self-improvement	21.96±5.51
	Optimistic	9.41±2.95

3.3 Correlation analysis of social support, self-efficacy and psychological resilience in patients with convalescent stroke

Shown in Table 3, the results of Spearman correlation analysis showed that there was a significant positive correlation between the score of psychological resilience, social support, and self-efficacy in patients with stroke during recovery.

Table 3. Correlation between social support, self-efficacy, and psychological resilience (r)

variables	Psychological resilience	Tenacity	Self-improvement	Optimistic
Social support	0.778**	0.650**	0.491**	0.436**
Subjective support	0.344**	0.289**	0.268**	0.183**
Objective support	0.571**	0.482**	0.368**	0.341**
Support utilization	0.509**	0.412**	0.366**	0.239**
Self-efficacy	0.750**	0.658**	0.451**	0.409**
Daily living	0.463**	0.381**	0.353**	0.309**
Self- management	0.706**	0.626**	0.383**	0.349**

$P^{**} < 0.01$

3.4 The mediating effect of self-efficacy between social support and Psychological resilience in patients with convalescent stroke

In this study, Amose 22.0 statistical analysis software was used to test the structural equation model, and the maximum likelihood method was used to estimate the model, and shown in Figure 1. From the perspective of the final model fitting indicators, GFI, AGFI, RMSEA and other major fitting evaluation indexes have reached the standard, the structural equation model has a good fitting degree (Table 4).

Then Bias-corrected percentile Bootstrap method was used to test the significance of the self-efficacy mediation effect which validates the incomplete mediating effect of self-efficacy between social support and psychological resilience. The normalized estimated path coefficient of social support for self-efficacy is 1.80 ($P < 0.05$) and for psychological resilience is 0.85 ($P < 0.05$). The normalized estimated path coefficient of self-efficacy for psychological resilience is 0.54 ($P < 0.05$). Therefore, the mediation effect of self-efficacy is 0.97 ($1.8 * 0.54$), and

the mediation ratio is 53.30% ($0.97 / (0.97 + 0.85) * 100$) (Table 5 and Table 6).

Table 4. Goodness-of-fit statistics for model

Fitting index	X ² /df	GFI	AGFI	NFI	TLI	CFI	RMSEA
Reference value	<5	>0.9	>0.9	>0.8	>0.8	>0.9	<0.08
Model	1.66	0.98	0.95	0.96	0.97	0.98	0.05

X²/df, Chi-square to degrees of freedom ratio; GFI, goodness-of-fit index; AGFI: adjusted goodness-of-fit index; NFI, normed fit index; TLI, Tucker–Lewis index; CFI, comparative fit index; RMSEA indicates root mean square error of approximation.

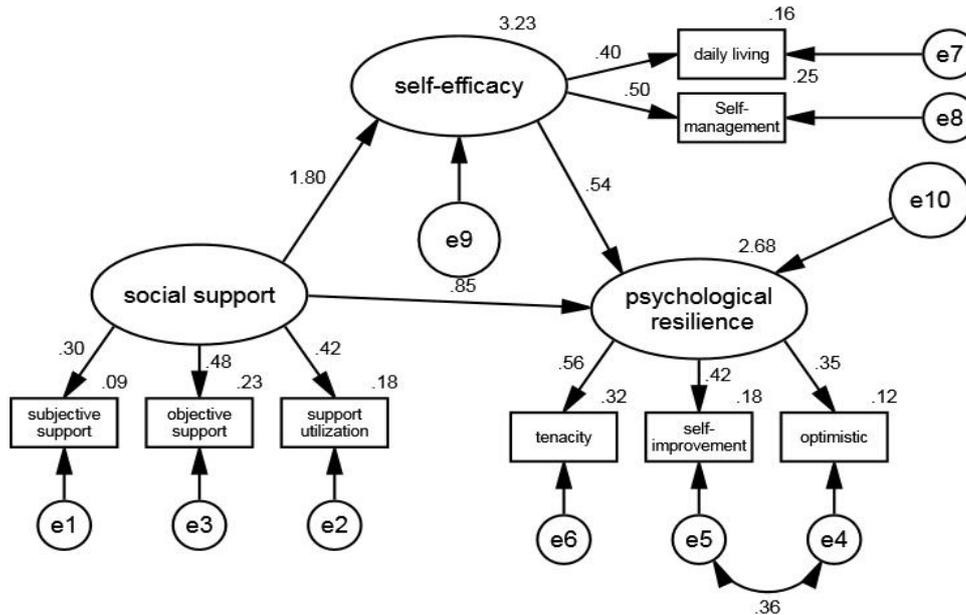


Fig. 1 The mediating effect of self-efficacy between social support and psychological resilience

Table 5. Model path coefficient estimation results

Item	Estimate	SE	CR	P
Self-efficacy ← Social support	7.55	1.66	4.54	<0.01
Psychological resilience ← Self-efficacy	0.16	0.04	4.06	<0.01
Psychological resilience ← Social support	1.02	0.19	5.31	<0.01

Estimate, Normalized path coefficient estimate; SE, Estimated Standard Error; CR, Critical ratio

Table 6. Effect of social support, self-efficacy and psychological resilience

Independent variable	Dependent variable	Direct effect	Indirect effect	Total effect
Social support	Psychological resilience	0.85	0.97	1.82
Self-efficacy	Psychological resilience	0.54	0.00	0.54
Social support	Self-efficacy	1.80	0.00	1.80

4. Discussion

4.1 Status of social support, self-efficacy and psychological resilience in patients with convalescent stroke

In this study, the score of social support in patients with convalescent stroke is at a medium level, which is

lower than that of Zhang [12] in the investigation of patients with community cerebral infarction. Stroke is a chronic disease. A series of sequelae after stroke influences, lead to a decline in patients' self-care ability and social ability. Some patients have poor psychological endurance, causing a variety of negative psychology in patients easily and thus affect access to social support.

This study shows that the self-efficacy score of patients with convalescent stroke is lower than that of Liang [13] using the same scale to investigate the self-efficacy of young and middle-aged stroke. The possible reason is that the subjects of this study are mainly middle-aged and elderly patients. The older the patient who encouraged more severe physical abrasion, lower ability of cooperating effectively, which seriously affect the compliance of treatment and confidence in rehabilitation exercise.

The level of Psychological resilience of patients with convalescent stroke in this study is lower than that of Yu [14] in the general population of China, and lower than that of the general population of the United States [15], which indicates that the level of psychological resilience of patients with convalescent stroke is relatively low. Psychological resilience is a protective factor for individual health, which can intuitively reflect the dynamic response of mental activities of stroke patients [16]. Therefore, our medical staff should pay attention to the patient's psychological adverse emotions while taking care of the patient's disease, and take appropriate measures to reduce the patient's psychological burden to promote the physical and mental health of patients.

4.2 The relationship between social support, self-efficacy and psychological resilience in patients with convalescent stroke

The results of this study show that social support and psychological resilience of patients with convalescent stroke are positively correlated. That is, the higher the level of social support, the better the psychological resilience of patients, which is consistent with the findings of Xu [17]. Social support, as an important buffer system for individual stress, can alleviate the negative effects of external influences on the patient's psychological resilience. Hu [18] shows that the more social support patient get, the greater the availability of social support, which greatly improves the patient's compliance with the doctor's order, and is beneficial to the patient's disease recovery.

This study show that there is a positive correlation between self-efficacy and psychological resilience in patients with convalescent stroke. That is, the self-efficacy level can significantly affect the patient's psychological resilience score, and the patients with higher self-efficacy level have higher psychological resilience score. The results are similar to the those of Zhang [19]. Studies have shown that the self-efficacy level of stroke patients is related to post-stroke depression. Improving the patient's self-efficacy can prevent the occurrence of depression [20]. Self-efficacy plays an important role in the process of self-regulation, which can improve the patient's coping ability and frustration tolerance and improve their psychological resilience.

4.3 Mediating effects of self-efficacy in patients with convalescent stroke

Structural equation model shows that self-efficacy plays a mediating role between social support and psychological resilience, that is, the positive effect of social support on psychological resilience increases with the increase of self-efficacy. The proportion of self-efficacy mediation effect was 53.30%. Social support not only has a direct predictive effect on psychological resilience ($P<0.01$), but also has an indirect prediction effect on psychological resilience by affecting the self-efficacy level ($P<0.01$). It can be seen that one of the key factors that improve the impact of social support on the level of psychological resilience of patients with convalescent stroke is having a high level of self-efficacy. Patients with a high self-efficacy are more able to actively seek social support from various sources, actively face the pressure caused by traumatic events to improve their level of psychological resilience. Studies have shown that self-efficacy plays a regulating role in the process of social support affecting anxiety, and with the self-efficacy improves, the negative regulating effect of social support on anxiety is enhanced [21]. Li [22] found that elderly patients with knee osteoarthritis, social support and self-efficacy can be used as influencing factors of psychological resilience, and there is a positive relationship between the two. This suggests our medical staff not only to focus on building a social support system for patients with stroke during recovery, but also to enhance the level of self-efficacy of patients while improving social support levels, fully increasing patients' confidence in facing the disease, reduce the anxiety, sadness and other bad psychology, and improve the level of psychological resilience.

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