A study on the relationship between perceived stress, self-efficacy and emotional intelligence of rehabilitation therapy students in China

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Research Article

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Abstract

AimTo understand the overall levels of stress perception, self-efficacy, and emotional intelligence among Chinese rehabilitation therapy students and to explore the relationship between the three.

Methods From October to November 2022, a questionnaire survey was conducted on 145 cases of rehabilitation therapy students at a medical school in Gansu, China, using the Stress Perception Scale, the General Self-Efficacy Scale, and the Emotional Intelligence Scale.

Results The total score of perceived stress was (44.33±7.05), the total score of emotional intelligence was (48.06±6.40), and the total score of general self-efficacy was (25.8±6.04), and there was a significant positive correlation between all three ($r>0.490$,$P<0.01$). Emotional intelligence had a significant mediating effect phenomenon between stress perception and general self-efficacy.

Conclusion Students in rehabilitation therapy had moderate levels of stress perception, emotional intelligence, and general self-efficacy, and emotional intelligence partially mediated the effect between general self-efficacy and stress perception. It is suggested that educators should actively assess the level of stress in rehabilitation therapy majors, pay more attention to students' emotional intelligence, improve self-efficacy, and prepare for the development of targeted intervention programs later.

Introduction

Modern rehabilitation medicine was introduced to China in the mid-1980s. Compared with clinical medicine, rehabilitation therapy has the characteristics of late start, rapid development and weak cultural background[1]. With the continuous development of China's social economy and the aging of the population, there are more and more patients with cerebrovascular diseases [2], and the number of people who need rehabilitation services must be increasing, and the demand for rehabilitation medical services in society is also increasing [3]. The professionals in rehabilitation therapy obviously cannot meet the growing social demand. Therefore, after the introduction of modern rehabilitation medicine in the early 1980s, the career of rehabilitation medicine developed rapidly[4]. Rehabilitation therapy is one of the branches of rehabilitation medicine and one of the most important branches, which is the most important means for patients to return to society from functional impairment to self-care eventually. Therefore, rehabilitation medicine and rehabilitation therapy occupy a pivotal position in the modern medical system. In China, the undergraduate program in rehabilitation therapy was first established in 2002 and has existed for less than 20 years and is an emerging specialty [5].

Stress perception refers to the confusion or danger to the psyche that arises when individuals face stressful events and adverse factors, causing physical discomfort and tension. Studies have shown that urban residents in China are currently psychologically stressed, with age and gender showing differences in stress levels, and a greater proportion of those with lower education and poorer economic status belonging to high-pressure groups [6]. University students, as a representative group of those receiving higher education, have a higher level of education and psychological problems are increasingly valued, and university students are a group with a high prevalence of psychological problems and coping styles are closely related to mental health [7].

Self-efficacy and refers to the degree to which a person assesses or trusts his or her expectations of his or her level of competence, and is an explanation of behavior by the interaction between the environment, behavior, and the individual. Self-efficacy, as proposed by Bandura, is the result of an individual's ability to measure and assess their own abilities, which in turn has an impact on people's behavioral choices, their level of commitment to things, their expressed interests, and determines their ability to accomplish particular things[8]. It follows that self-efficacy is largely concerned with the assessment of self-efficacy and is an important emotional manifestation of self-awareness. The moderating role of emotional intelligence has been found by numerous scholars, but less so in the variables of this study. Combined with theories related to emotional intelligence, individuals with high emotional intelligence are better able to use, regulate, and identify their own emotions and those of others. Therefore, this study analyzed the relationship between perceived stress, self-efficacy, and emotional intelligence among rehabilitation therapy students through a cross-sectional survey to improve the mental health of rehabilitation therapy students and provide more talents for China's rehabilitation career based on the findings.

Materials And Methods

1.1 Study population

From October to November 2022, a total of 200 questionnaires were distributed and 145 valid questionnaires were recovered using a combination of stratified and random sampling among rehabilitation therapy students at a medical school in Gansu, China. Inclusion criteria: students of rehabilitation therapy; informed consent and voluntary participation. Exclusion criteria: students who were on leave during the survey; those who were unable to understand and answer the questionnaire.

1.2 Methods

An anonymous questionnaire test was used. Before the survey, the investigator explained the significance of this research study and the precautions related to questionnaire completion. The respondents were instructed to complete the questionnaire online and submit it to the system immediately, and the link to the questionnaire was sent to the students on internship by WeChat.

1.3 Survey tools

1.3.1 General information questionnaire

Self-designed general information questionnaire, including grade, gender, ethnicity, age, major selection method, from, whether they are only child, whether they are class leaders, and per capita monthly family income.

1.3.2 General self-efficacy scale(GSES)

It was developed by Professor Schwarzer [9], a leading German clinical and health psychologist, and his colleagues in 1981. The scale has now been translated into at least 25 languages and is widely used internationally. The Chinese version was translated and revised by Wang Cai Kang [10] et al. The scale has a Cronbach's alpha of 0.87 and has relatively good validity. There are 10 items related to the individual's self-efficacy when encountering frustration or difficulties, using a 4-point Likert scale, with scores ranging from 1 to 4 on a scale of "not at all correct" to "completely correct", with a total score of 10 to 40. The higher the score, the higher the sense of self-efficacy.

1.3.3 perception Stress scale(PSS)

Cohen et al [11] developed the Perceived Stress Scale in 1983 to measure the stress level of individuals. The scale consists of 14 questions that require the respondent to answer questions based on their own feelings of tension and loss of control under stress. It is a widely used stress measurement tool with good reliability and validity. It is divided into 6 areas: stress related to patient care, faculty and staff, tasks and workload, peers and daily life, lack of professional knowledge and skills, and environmental factors.

1.3.4 Wong and Law Emotional Intelligence Scale(WLEIS)

Emotional intelligence was measured using the Wong and Law Emotional Intelligence Scale(WLEIS) developed by Chi-Sum Wong and Kenneth.S.Law (2002).

The reliability and validity of this scale were good. The Likert 4-point scale was used, ranging from "strongly disagree" to "strongly agree" on a scale of 1-4, with higher scores indicating higher emotional intelligence [12].

1.4 Statistical analysis

SPSS 24.0 software was used for statistical analysis of the data. Count data were described by frequency and percentage; measurement data were expressed by mean and standard deviation. Pearson was used for correlation analysis. The Process plug-in in SPSS developed by Hayes was used to perform the mediated effects test and analysis. The test level was $\alpha=0.05$.

Results

2.1 Stress perception, general self-efficacy, and emotional intelligence levels

2.1.1 Stress perception

There were significant differences ($P < 0.05$) in the levels of stress perception among students of different modalities of choosing rehabilitation therapy program and different ethnic groups. See Table 1.

Table 1. Comparison of stress perceptions among rehabilitation therapy students(M±SD)

		N	Sense of loss of control	Sense of tension	Total score	t/F	P
Education	Specialized students	53	22.23±3.92	21.83±4.01	44.06±6.86	0.713	0.723
	Undergraduates	92	22.67±4.45	21.82±4.35	44.49±7.20		
Age	16~18	16	22.69±5.93	23.19±5.49	45.88±9.28	0.933	0.427
	19 21	90	22.38±3.82	21.92±3.8	44.3±6.08		
	22 24	36	22.53±4.51	20.81±4.22	43.33±7.83		
	>25	3	25.33±4.62	23.67±7.51	49±12.12		
Grade	Freshman	24	22.54±4.15	21±3.88	43.54±6.19	1.007	0.392
	Sophomore	44	23.59±4.98	22.27±5.33	45.86±8.44		
	Junior	50	21.6±3.33	22±3.16	43.6±5.56		
	Senior	27	22.41±4.44	21.48±4.24	43.89±7.74		
Gender	Female	89	22.25±4.29	21.97±4.6	44.21±7.59	0.364	0.801
	male	56	22.93±4.2	21.59±3.55	44.52±6.16		
Ethnicity	Han Chinese	119	22.8±4.27	22.06±4.29	44.86±7.24	0.17	0.054
	others	26	21.19±4	20.73±3.69	41.92±5.64		
Are you an only child	Yes	22	21.36±3.55	21±3.85	42.36±4.94	0.139	0.156
	No	123	22.72±4.35	21.97±4.27	44.68±7.33		
Are you a class officer	Yes	33	22.42±4.02	22.52±4.37	44.94±6.50	0.838	0.575
	No	112	22.54±4.34	21.62±4.16	44.15±7.23		
Ways of choosing rehabilitation profession	Voluntary selection	69	23.86±5.05	22.35±4.94	46.20±8.47	5.145	0.007
	Transfer	54	21.48±2.75	21.5±3.3	42.98±4.76		
	Influenced by others	22	20.82±3.29	20.95±3.64	41.77±5.35		
Where are you from	Urban	28	22.54±4.43	21.64±4.16	44.19±7.16	0.374	0.899
	Rural	117	22.50±4.23	21.86±4.24	44.37±7.06		
Monthly per capita family income	<1000	41	23.76±4.01	22.41±4.74	46.17±7.70	2.012	0.115
	1000-2000	63	21.79±4.21	22.38±4.17	44.17±7.01		
	2000-3000	27	22.63±4.5	20.89±3	43.52±5.49		
	>3000	14	21.86±4.26	19.36±3.93	41.21±7.15		

2.1.2 General self-efficacy

There were significant differences ($p<0.05$) in the general self-efficacy of the students by the way they chose to specialize in rehabilitation therapy and by gender. See Table 2.

Table 2 Comparison of general self-efficacy of rehabilitation therapy students (M±SD)

		N	Total score	t/F	P
Education	Specialized degree	53	25.85±6.44	0.493	0.943
	Undergraduate degree	92	25.77±5.84		
Age	16~18	16	48.06±6.40	1.191	0.316
	19 21	90	25.4±5.92		
	22 24	36	26.92±5.76		
	>25	3	30±9.54		
Grade	Freshman	24	27.08±5.24	1,66	0.178
	Sophomore	44	26.66±5.66		
	Junior	50	24.34±5.95		
	Senior	27	25.96±7.15		
Gender	Female	89	25.24±6.15	0.76	0.157
	male	56	26.70±5.80		
Ethnicity	Han Chinese	119	26.04±6.18	0.349	0.304
	others	26	24.69±5.33		
Are you the only child in your family	Yes	22	24.59±5.17	0.313	0.31
	No	123	26.02±6.18		
Are class leaders	Yes	33	26.33±6.51	0.907	0.566
	No	112	25.64±5.92		
How to choose the rehabilitation profession	Voluntary selection	69	27.09±6.52	3.106	0.048
	Transfer	54	24.74±5.33		
	Influenced by others	22	24.36±5.53		
Where are you from	Urban	28	26.54±7.23	0.16	0.475
	Rural	117	25.62±5.74		
Monthly per capita family income	<1000	41	26.83±5.70	0.911	0.437
	1000-2000	63	24.94±6.64		
	2000-3000	27	26.37±5.46		
	>3000	14	25.57±5.14		

1.1.3 Emotional Intelligence

There were significant differences ($p<0.05$) in the general self-efficacy of students with different ways of choosing a rehabilitation therapy program and different per capita monthly family income. See Table 3.

Table 3 Comparison of emotional intelligence of students in rehabilitation therapy (M±SD)

		N	Self-emotional assessment	Emotional assessment of others	Emotional utilization	Emotional regulation	Total score	t/F	P
Academic Background	Specialized degree	53	11.94±1.57	12.02±1.84	11.58±1.99	11.45±1.96	47±5.86	0.511	0.123
	Undergraduate degree	92	12.34±1.64	12.27±1.96	12.01±2.02	12.04±1.94	48.66±6.64		
Age	16~18	16	12.06±1.98	12±2.10	11.5±1.79	11.13±1.93	46.69±6.85	0.811	0.49
	19 21	90	12.13±1.62	12.17±1.99	11.71±2.09	11.86±2.05	47.87±6.59		
	22 24	36	12.33±1.53	12.31±1.77	12.22±1.88	11.94±1.74	48.81±5.83		
	>25	3	13±1	12±0	13.67±1.53	13.33±1.53	52±4		
Grade	Freshman	24	12.70±1.73	12.75±2.38	12.25±2.13	12.42±2.10	50.13±7.16	2.271	0.083
	Sophomore	44	12.36±1.59	12.27±1.68	12.20±1.81	12.09±1.70	48.93±5.60		
	Junior	50	11.86±1.60	11.82±1.90	11.38±2.09	11.36±2.07	46.42±6.51		
	Senior	27	12.07±1.54	12.19±1.82	11.81±2.02	11.74±1.93	47.81±6.28		
Gender	Female	89	12.04±1.59	12.17±1.99	11.66±1.95	11.61±2.00	47.48±6.47	0.921	0.176
	male	56	12.43±1.66	12.20±1.81	12.16±2.10	12.18±1.86	48.96±6.23		
Ethnicity	Han Chinese	119	12.18±1.70	12.13±1.95	11.87±2.03	11.82±1.98	47.98±6.55	0.745	0.773
	others	26	12.27±1.25	12.42±1.79	11.81±2.00	11.88±1.90	48.38±5.76		
Are you the only child in your family	Yes	22	12.05±1.36	12.27±1.55	12.18±1.68	11.82±2.08	48.31±4.82	0.293	0.835
	No	123	12.22±1.67	12.16±1.98	11.80±2.07	11.83±1.95	48.01±6.66		
Are class leaders	Yes	33	11.91±1.65	12.21±1.82	11.48±2.33	11.48±2.28	47.09±6.77	0.249	0.326
	No	112	12.28±1.61	12.17±1.95	11.96±1.91	11.93±1.86	48.34±6.29		
How to choose the rehabilitation profession	Voluntary selection	69	12.59±1.57	12.45±2.08	12.41±2.02	12.30±1.87	49.75±6.51	6.572	0.002
	Transfer	54	12.07±1.37	12±1.77	11.59±2	11.65±2.05	47.31±6.03		
	Influenced by others	22	11.23±1.95	11.77±1.66	10.77±1.48	10.77±1.57	44.55±5.29		
Where are you from	Urban	28	12.32±1.68	12.46±2.19	11.93±2.09	11.64±2.02	48.36±6.88	0.566	0.782
	Rural	117	12.16±1.61	12.11±1.85	11.84±2.01	11.87±1.95	47.98±6.31		
Monthly per capita family income	<1000	41	12.76±1.46	12.88±1.72	12.56±1.66	12.51±1.75	50.71±5.42	0.902	0.01
	1000-2000	63	11.86±1.61	11.81±2.10	11.41±1.91	11.38±1.95	46.46±6.47		
	2000-3000	27	12.19±1.59	12.07±1.21	11.74±2.28	11.70±2.07	47.70±6.12		
	>3000	14	12.07±1.90	12±2.32	12±2.48	12.07±1.98	48.14±7.36		

2.2 Correlation analysis

There was a significant two-by-two positive correlation ($p < 0.01$) between stress perception, general self-efficacy, and emotional intelligence. See Table 4

Table 4 Correlation analysis of force perception, general self-efficacy, and emotional intelligence in rehabilitation students

	WLEIS	GSES	PSS
WLEIS	1		
GSES	0.581**	1	
PSS	0.362**	0.490**	1

** At the 0.01 level (two-tailed), the correlation is significant.

2.3 Mediating effects between stress perception, general self-efficacy, and emotional intelligence

There was a partial mediating effect between stress perception, general self-efficacy, and emotional intelligence, as shown in Table 5. the model of the mediating effect is shown in Figure 1.

Table 5 Mediated effect analysis of stress perception, general self-efficacy, and emotional intelligence among recreation and therapy students

Effect	Independent variable	Dependent variable	β	t	Boot LLCI	Boot ULCI	P
Direct effect	PSS	GSES	0.2757	4.7274	0.1604	0.391	<0.001
Indirect effect	PSS	WLEIS	0.3282	4.6401	0.1884	0.468	<0.001
	WLEIS	GSES	0.4387	6.8259	0.3117	0.5658	<0.001
Total effect	PSS	GSES	0.144	3.8095	According to the mediating effect argument		<0.001

Discussion

The perception of stress among rehabilitation therapy students is at a moderate level, which is consistent with most studies[13]. As a group receiving higher education, college students have not yet entered society and are subjected to multiple sources of stress, and changes in their environment, economic status, and emotional problems can increase their vulnerability. Some studies have shown that academic stress is the most important source of stress faced by college students in China at present, and is the most important factor threatening their psychological health. [14] Therefore, it is recommended that universities should pay attention to students' psychological care to alleviate their academic stress.

The general self-efficacy of rehabilitation therapy students is at a moderate to high level. Self-efficacy, as the basis for subjective cognition by individuals, can promote self-regulation and self-correction when managing stressors[15]. Related studies have shown that self-efficacy controls an individual's demands on the environment, and students with high self-efficacy are able to use effective learning strategies and successful experiences to overcome the difficulties they face in their environment [16-18]. Medical students with higher levels of academic self-efficacy handle academic stress more easily and have more energy to volunteer.

Emotional intelligence is important for the achievement of academic and social success of college students, which is conducive to maintaining a healthy psychological state and is an influential factor that cannot be ignored in building a good psychological state of college students. The results of this study showed that the emotional intelligence of rehabilitation therapy students was at a moderate

level and proportional to stress levels, which is different from previous studies [19,20]. Due to the current demands of society on the development of the rehabilitation therapy profession, medical school education is increasing year by year in terms of both curriculum difficulty and graduation pressure, and rehabilitation therapy students are not only required to complete their studies but also face a series of dilemmas in their future career development in the current situation, which shows the importance of the current emotional intelligence training in medical schools. At the same time, because of this series of external pressures, students' initial enthusiasm for the profession is gradually being consumed, which has the effect of bringing about a negative attitude towards academic life [21-22].

There is a significant "two-by-two correlation" and "sequential positive prediction" effect between stress perception, general self-efficacy and emotional intelligence, and emotional intelligence has a partial mediating effect between general self-efficacy and stress perception. This suggests that emotional intelligence affects self-efficacy in two ways: directly through stress perception and indirectly through emotional intelligence.

Conclusion

Stress perception, emotional intelligence, and general self-efficacy of rehabilitation therapy majors were all at moderate levels, and emotional intelligence had a partially mediating effect between general self-efficacy and stress perception. This suggests that educators should actively assess the stress level of rehabilitation therapy majors, enhance their attention to students' emotional intelligence, and improve their self-efficacy to prepare for the development of targeted intervention programs at a later stage.

Limitations And Recommendations

Due to the limitation of research resources, only students from one medical school were selected as the subjects of this study, and there is still room for improvement in terms of sample diversity and sample size. The online survey was used to collect data, and individual respondents may not have completed the responses carefully. Future research will be combined with personal interviews and qualitative research to improve the accuracy of the survey study.

Abbreviations

GSES
General self-efficacy scale
PSS
perception Stress scale
WLEIS
Wong and Law Emotional Intelligence Scale

Declarations

Ethics approval and consent to participate

The Ethics Committee of Gansu Medical College approved the study. (approval number: 2022002). All the partici pants provided an informed consent.

Consent for publication

Not applicable.

Availability of data and materials

The data sets generated and/or analyzed during the current study are those available from the corresponding authors upon reasonable request.

Competing interests

All authors declare that they have no conficts of interest.

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Authors' contributions

ZYX designed the study, analyzed and interpreted the data, and drafted the manuscript. HT formally analyzed and surveyed, providing substantial support in the analysis and interpretation of the data. ZYX contributed to key revisions to the report version. All authors read and approved the final manuscript.

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Statement

All methods were carried out in accordance with relevant guidelines and regulations.

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Figures

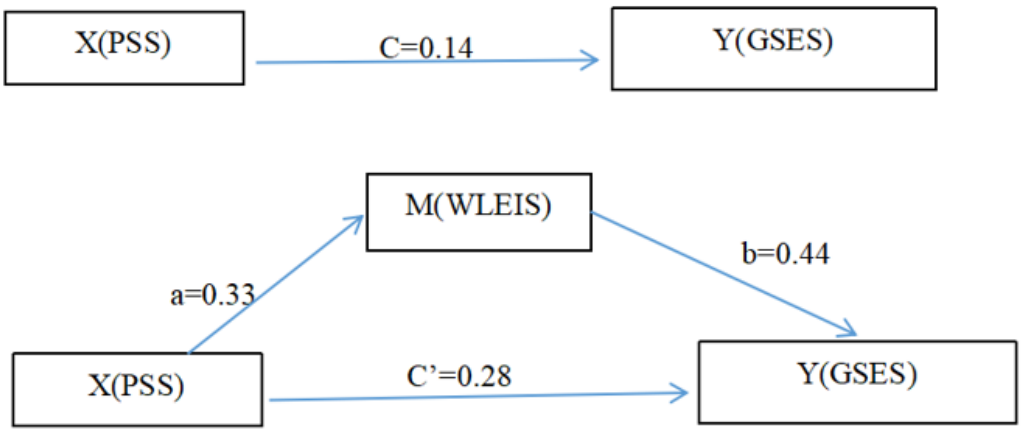

Figure 1

stress perception, general self-efficacy, and emotional intelligence of students in the rehabilitation program mediated effect model