

The Effects of Cognitive Social Support on Medical Students' Depressive Symptoms: the Mediating Role of Self-efficacy



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Abstract: 499 medical students were given the perceptual social support scale and the self-efficacy scale in order to investigate the link and processes between depression symptoms and these constructs. The perceptual social support scale, the self-efficacy scale, and the depression scale were used to investigate 499 medical students. The results showed that: ① Depressive symptoms were substantially inversely correlated with perceived social support; ② The association between depressed symptoms and perceived social support was mediated by self-efficacy. Consequently, lowering depressed symptoms in medical students can be achieved through raising self-efficacy and social support.

Keywords: navigating social support; self-efficacy; depression

1. Introduction

Depression is a common emotional experience of persistent loss, sadness, and hopelessness in an individual's life, which triggers behaviors such as low mood, sleep disorders, loss of appetite, and even self-harm and suicide (Collado et al., 2016). According to the World Health Organization, more than 300 million people worldwide suffer from depression (Oppenheimer et al., 2018). College students in late adolescence need to adapt to various role changes, and because of their immature psychological state, they are prone to a high incidence of depression (World Health organization, 2017). Wang Miyuan et al. showed that the incidence of depressive symptoms among college students in the last decade was 24.71%, and showed a rising trend year by year (Wang et al., 2020). Depression seriously affects the physical and mental health and socialization development of college students (Shen et al., 2018; Gu et al., 2015). Studies have shown that depression in college students is not only affected by

external environmental factors, such as stressful life events (Ma et al., 2022) and group interventions (Zhang et al., 2023) but also by internal cognitive factors, such as self-efficacy (Shen et al., 2018) and appreciation of social support (Zhang et al., 2023). According to self-systems theory, external environmental elements have a direct impact on how well people's physical and mental health develop, but internal cognitive aspects also play a part and shouldn't be overlooked (Zhao, 2022). Appreciation of social support refers to the individual's perception and evaluation of the practical help provided by others, which belongs to the internal and stable psychological traits (Quan, 2008b). It has been found that apprehending social support as a positive psychological resource can increase an individual's coping efficacy and alleviate depression, anxiety, and sleep disorders (Cheng & Wang, 2012). The buffer model of social support states that practical help provided by others often requires internal cognitive factors to be more effective (Quan, 2008a) and that perceptual social support can negatively predict an

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individual's level of depression. Appreciative social support, as a protective factor, is a strong predictor of an individual's psychological well-being and largely alleviates the individual's depressive symptoms (Wang et al., 2023; Zhang, Liu, et al., 2023).

Self-efficacy, as a positive psychological intervention (Ma et al., 2022), refers to the overall self-efficacy that an individual demonstrates when facing different environments or challenging demands (Zhang et al., 2023). Self-efficacy among college students was found to be significantly negatively correlated with depression (Wu, 2021). The higher an individual's level of self-efficacy, the higher his or her self-confidence, the more positive and optimistic he or she will remain in accomplishing tasks, and thus less likely to be depressed (Wang et al., 2023; Zhang, Liu, et al., 2023). On the contrary, individuals with low self-efficacy usually view and interpret their psychological behaviors in daily life negatively (Liu & Li, 2012; Lin, 2010) and are prone to experience more depression and anxiety. Research has also found (Wang et al., 2023) that perceived social support is significantly positively correlated with self-efficacy, and individuals with high levels of perceived social support will be more proactive in establishing connections with the outside world and believe that other people or the community will provide support and assistance when they need help, which will, in turn, increase the sense of efficacy in coping with difficulties and setbacks. It can be seen that increasing an individual's level of self-efficacy may play an important role in enhancing his or her level of perceived social support (Zang et al., 2018).

In conclusion, perceptual social support influences depression in medical students both directly and indirectly through self-efficacy. The mental well-being of medical students has a significant influence on the healthcare services sector in China, as they serve as the industry's reserve force. In order to offer a solid theoretical and practical foundation for enhancing medical students' mental health, this study attempts to examine the impact of understanding social support on their depression symptoms.

2. Research Methods

2.1. Research subjects

A medical college in Guizhou Province was selected as the research object, and a questionnaire

survey was conducted through the platform of "Questionnaire Star", 26 invalid questionnaires were excluded, and 499 valid questionnaires were retained, with a validity rate of 95.05%. There were 94 (18.84%) male students and 405 (81.2%) female students, 144 (28.9%) nursing students, 149 (29.9%) pharmacy students, 159 (31.9%) health management students, and 47 (9.4%) other students. The mean age was 19 ± 0.19 years.

2.2. Research tools

2.2.1. Perceived Social Support Scale (Perceived Social Support Scale, PSSS)

This scale was developed by Zimet et al (Jiang, 1999) and consists of 12 entries divided into three dimensions: family support, friend support, and teacher or friend support. A 7-point scale from 1-7 was used. Higher scores on the scale indicate a higher level of social support for the individual's comprehension. In this study, the Cronbach's alpha coefficient of the scale was 0.91.

2.2.2. Patient Health Questionnaire-9 (PHQ-9)

This questionnaire mainly screens and assesses depressive symptoms in the past two weeks (Chen et al., 2015), with a total of 9 entries, using 0-3, 4-point scoring; the higher the final score of the scale, the higher the severity of depressive symptoms. In this study, the Cronbach's alpha coefficient for the scale was 0.97.

2.2.3. General Self-Efficacy Scale (GSES)

The Chinese version of this scale was revised by Wang Caikang et al (Wang et al., 2001), which focuses on assessing an individual's state of self-confidence when encountering setbacks or difficulties. There are a total of 10 entries, which are scored on a 4-point scale from 1-4. The higher the final score of the scale, the higher the level of self-efficacy. In this study, the Cronbach's alpha coefficient of the scale was 0.88.

2.3. Data processing

SPSS22.0 software was used to operate the internal consistency coefficient, common method bias test, descriptive statistics, correlation analysis, and mediation effect analysis on the data.

2.4. Common method bias test

All of the scales' entries were subjected to an exploratory factor analysis using Harman's one-way technique.

There was no significant common technique bias impact, as seen by the first factor's 26.08%

explanation of the total variance, which was less than the crucial value of 40%. Six common factors with eigenroots greater than 1 were retrieved.

3. Research Results

3.1. Overall profile of depression among medical students

Out of 499 medical students, the depression detection rate was 30.23% (151), of which 136 (27.3%) were moderately depressed and 15 (3%) were severely depressed.

3.2. Descriptive statistics and correlation analysis of each variable

Correlation analysis showed that there was a significant negative correlation between comprehending social support and depression ($r=-0.40$, $P<0.01$); self-efficacy was significantly negatively correlated with depression ($r=-0.32$, $P<0.01$); and comprehending social support was significantly positively correlated with self-efficacy ($r=0.50$, $P<0.01$).

Table 1 Descriptive statistics and correlation analysis of each variable

Variable	<i>M±SD</i>	1	2	3
1.Depression	16.74±4.75	1		
2.Perceived Social Support	57.94±12.52	-0.40**	1	
3.Self-efficacy	26.82±4.27	-0.32**	0.50**	1

Notes: * $p<0.05$, ** $p<0.01$, *** $p<0.001$, the same as below.

3.3. Regression analysis of comprehending social support and self-efficacy on depression

Regression prediction analyses were carried out for each variable to investigate the impacts of navigating social support and self-efficacy on depression in more detail. As indicated in **Table 2**, the results indicated that navigating social support

had a significant positive predictive effect on self-efficacy ($\beta=0.50$, $p<0.001$), a significant negative predictive effect on depression ($\beta=-0.40$, $p<0.001$), and a significant predictive effect on depression that resulted from navigating social support and self-efficacy combined ($\beta=-0.32-0.10$, $p<0.05$).

Table 2 Regression analysis of each variable

Dependent variable	Predictor Variables	<i>R</i> ²	Adjusted <i>R</i> ²	<i>F</i> value	(Standardization coefficient (Beta))	<i>t</i>
Self-efficacy	Perceived Social Support	0.25	0.25	266.92	0.50	12.92***
Depression	Perceived Social Support	0.19	0.19	38.79	-0.32	-6.81***
	Self-efficacy				-0.16	-3.46**

3.4. Test of the mediating effect of self-efficacy

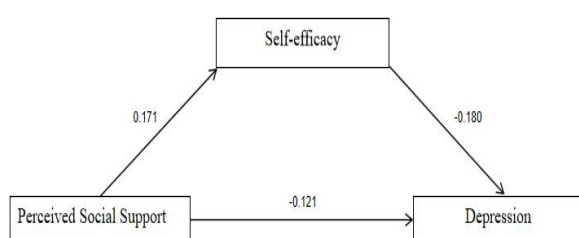
Table 3 Analysis of mediating effects

Way	Effect size	Boot Standard error	Proportion of mediating effect	(95%CI, 5000 times)	
				floor	Upper limit
Perceived Social Support---Depression (Total effect)	-0.15	0.02	20%	-0.18	-0.12
Perceived Social Support-Self-efficacy-Depression (Mediating effect)	-0.03	0.01		-0.06	-0.01
Perceived Social Support-Depression (Direct effect)	-0.12	0.02		-0.16	-0.09

Based on the SPSS macro program process, the 95% confidence interval of the mediating effect was

estimated by repeated sampling 5,000 times using the bias-corrected non-parametric percentile bootstrap method, and it was found that the Bootstrap 95% confidence interval of the mediating effect of self-efficacy did not contain 0. Navigating social support affects depression through two paths, the first path is: appreciation of social support → depression, the direct effect value is -0.12, and the confidence interval does not contain 0, indicating that appreciation of social support can directly affect depression; the second path is: appreciation of social support → self-efficacy → depression, the indirect effect value is -0.03, the confidence interval does not contain 0, indicating that self-efficacy between appreciation of social support and depression there is a significant part of mediation effect, the ratio of mediation effect to total effect, the mediation effect of self-efficacy to total effect. The ratio of the amount to the total effect is $(-0.03/-0.15) = 20\%$. See **Table3** and **Figure1**.

Figure 1 The mediating role of self-efficacy in understanding the relationship between social support and depression



4. Discussion

4.1. Characteristics of medical students' comprehension of social support, self-efficacy, and depression

The results of the study showed that 30.3% of medical students experienced different degrees of depression, which was consistent with the overall prevalence rate of college students in China (24.71%) (Wang et al., 2020), of which, severe depression accounted for 3%, indicating that a small number of medical students had more serious mental health problems. The scores of collage club support (57.94 ± 12.52) were lower than those of Zang Hongyun et al. (67.82 ± 12.17) (Zang et al., 2018), and the scores of self-efficacy (26.82 ± 4.27) were lower than those of Miao Yakun et al. (36.79 ± 8.00) (Miao et al., 2020). There may be several reasons for this:

first, college students are psychologically immature, and are prone to impulsive and emotional impulses, and childishness and maturity coexist; second, they carry expectations from themselves, their families, and society, and are under greater psychological pressure; third, because of their specialty, medical students are likely to form a perfectionist personality, and the higher expectations of their academic and employment prospects lead to more prominent psychological problems and are more likely to develop negative emotions such as anxiety, depression and panic (Liu et al., 2023).

4.2. Relationship between perceived social support, self-efficacy, and depression among medical students

It was shown that there was a substantial negative correlation between depression and medical students' perceptions of social support and self-efficacy; consistent with the findings of earlier research, perceived social support and self-efficacy had a strong negative predictive effect on depression (Wang et al., 2023). According to social support theory, an individual's mental health is not positively impacted by the amount of practical help they receive from others (Liu & Cheng, 2019). Understanding social support has a more important role and significance for an individual's mental health and future development. While practical assistance from others is a valuable resource in an individual's social support system, it also helps to counteract the harm caused by various difficulties or setbacks. Higher social support awareness makes it easier for people to recognize the useful assistance that they receive from others, from the state, and from society. It also helps them to recognize the significance of this assistance for their present and future development. Finally, higher social support awareness makes it easier for people to turn this assistance into internal resources, which raises their awareness of their own abilities (Wang et al., 2023; Ma et al., 2022). Research has shown that people who have a high sense of their own abilities can adjust more easily to changes in their surroundings and are more likely to look for supportive social networks. Individuals with lower levels of self-efficacy (Liu & Li, 2012; Liu et al., 2023) usually show low self-confidence, tend to withdraw, and doubt themselves when facing difficulties, and are prone to fall into undesirable situations and depression. Individuals with high

levels of self-efficacy and a high ability to appreciate social support are more inclined to cope with stressful events in a positive frame of mind and are less prone to negative emotions such as depression. Therefore, improving medical students' perceptions of social support and enhancing their recognition of their abilities are important to help them improve their mental health and reduce depression.

4.3. The moderating role of medical students' self-efficacy in the association between depression and perceived social support

The study discovered that the association between depression and medical students' appreciation of social support was mediated by self-efficacy, which accounted for 20% of the total impact ratio. The study's findings also provided insight into a deeper mechanism underlying how depression is impacted by perceived social support: people's levels of self-efficacy can mitigate the negative effects of this support. The social support buffer model suggests that practical help provided by others often requires a greater role of internal cognitive factors (Quan, 2008a), which suggests that perceptual social support, as an internal cognitive factor, will play a more important role in promoting the healthy development of individuals. Higher perceptual social support levels make people more likely to have a good self-evaluation, which raises their levels of self-efficacy (Ma et al., 2021). Individuals with higher levels of self-efficacy have greater endurance in the face of difficulties and maintain a more positive attitude and self-confidence (Miao et al., 2020). On the contrary, medical students with low levels of appreciative social support are unable to better perceive and experience actual help from the outside world (Wang et al., 2023; Liu et al., 2023), thus negatively assessing their abilities, resulting in lower self-efficacy, and they have difficulty buffering the painful experience of difficulties or external pressures when facing difficulties or frustrations, and their psychological well-being will be lower.

In summary, improving the level of medical students' perception and evaluation of others' actual helping behaviors can effectively help them to correctly evaluate their abilities as well as their values so that they can have a higher level of mental health and thus reduce depressive symptoms.

5. Suggestions

(1) Establish a support system: encourage medical students to actively participate in social activities to expand their social support network; set up support groups or social activities to promote communication and cooperation among peers.

(2) Enhance mental health education: provide training on mental health and stress management to enable students to better understand and cope with depressive symptoms; provide mental health resources, such as lectures, brochures, or online materials, to help them better manage their emotions.

(3) Enhancing self-efficacy: providing training and workshops aimed at improving medical students' self-efficacy so that they can face academic and life challenges with greater confidence; encouraging the setting of short- and long-term goals and providing support to help them achieve these goals step by step.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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