

## Research Article

# The Mediating Effect of Mental Health Literacy on Psychological Resilience and Psychological Distress of Medical College Students

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**Purpose.** Psychological resilience plays an important role in relieving the psychological distress. However, little is known about its underlying mechanisms. Mental health literacy, an important way to promote mental health, may mediate the effect of psychological resilience on psychological distress. This study aimed to explore the relationship between mental health literacy, psychological resilience, and psychological distress and explore the mediating effect between psychological resilience and psychological distress. **Design and Methods.** A cross-sectional study design was used. A total of 627 medical students were selected from one university. An electronic questionnaire was administered to collect information on the level of mental health literacy, psychological resilience, and psychological distress. Pearson's correlation analysis was used in analyzing the relationship, and the Bootstrap method was used to test the mediating effects. **Findings.** Psychological distress significantly negatively correlated with mental health literacy and psychological resilience ( $P < 0.001$ ). The indirect effect of mental health literacy accounted for 50.43% of the total effect between psychological resilience and psychological distress. **Practical Implication.** Psychological resilience decreased the level of psychological distress, and this relationship was partially mediated by mental health literacy. These findings showed that efforts aimed at enhancing the mental health literacy may prevent or reduce the prevalence of psychological distress symptoms among college students.

## 1. Introduction

Mental health is a level of psychological well-being, which is defined as “a happy state in which individuals are able to function at a satisfactory level of emotional and behavioral adjustment” [1]. According to data of the World Health Organization, nearly 75% of psychological problems occur in youth [2]. Contemporary college students are in an era of rapid social change, facing the increasingly complex competition in the modern society. At present, with the pressure from various aspects, the psychological problems are on the rise among college students [3]. College is the turning point of transition to late adolescence or youth. Whether college students are psychologically healthy will not only affect their study and life but also affect their lifelong development [4].

Data show that the proportion of psychological distress among college students is as high as 90.86% [5].

Positive psychology research discusses mental health issues from a positive perspective and has become a new direction and mainstream of mental health research [6]. From the perspective of positive psychology, college students should develop their ability to maintain and improve their mental health.

Mental health literacy (MHL) was proposed by Jorn, which can be summarized as knowledge of prevention of mental illness, recognition of mental illness, knowledge of seeking help and effective treatment, and knowledge of effective self-help strategies and psychological first-aid skills [1]. MHL refers to the cognitive and social skills of individuals to obtain, understand, and use information to

promote and maintain a good level of health, including not only knowledge components but also knowledge-related actions [7]. As an important factor of mental health promotion, MHL has been widely studied internationally. The results showed that a high level of MHL is conducive to early identification of mental illness, reduction of stigma, and accessing timely and effective support and treatment, thus improving the mental health of individuals and the public [8]. However, there are also few studies on the relationship between mental health literacy and other variables. In the process of maintaining and promoting mental health, which variables play a moderating or mediating role and the effect of the role remain to be further explored.

Psychological resilience is also the focus of positive psychology. Psychological resilience refers to the dynamic process of an individual coping with adversity and is closely related to the symptoms of mental disorders [9]. Studies have shown that resilience can be conceptualized as a mental health indicator related to exposure to stressors, which can buffer the adverse mental health status of individuals after exposure to stressors [10]. As an individual's protective resource, resilience can resist the negative impact of stress on health and promote positive psychological results and maintain and improve the level of physical and mental health. Research has shown that there is a significant negative correlation between psychological resilience and psychological distress, and psychological resilience can directly affect psychological distress and plays an important role in mental health [11]. At present, psychological researchers focus on using various psychological models to explain the mechanism of psychological action, such as whether positive personality traits directly promote mental health or indirectly affect mental health through mediating effect.

Although MHL and psychological resilience are important to the mental health of college students, there is a relative lack of research on the relationship between the MHL and psychological resilience. Moreover, studies are needed to prove whether MHL does affect psychological distress and how and to what extent it has an impact on it.

On the one hand, psychological resilience can protect individuals from the detrimental effects of stress and adversity by softening the negative impact from stress-related events. Previous studies showed that people with better resilience are associated with reduced psychological distress as they select active coping strategies [12]. On the other hand, MHL has three dimensions including recognition, knowledge, and attitude. Individuals with high MHL have the ability to know more about mental health and have positive attitude to cope with the psychological problems [13]. There may exist some potential mechanisms about the effect of psychological resilience and MHL on psychological distress. Therefore, this study aims to explore the relationship between MHL, psychological distress, and psychological resilience of college students and to explore the mediating role of MHL in the relationship between psychological resilience and psychological distress, so as to provide a theoretical basis for the promotion of mental health of college students.

## 2. Materials and Methods

**2.1. Design and Sample.** A cross-sectional study design was used to investigate the relationship between MHL, psychological resilience, and psychological distress of college students. 692 college students from Harbin Medical University were selected by the random sampling method. The inclusion criteria were as follows: ① being college students; ② able to complete electronic questionnaires independently; and ③ willing to participate in this research. Exclusion criteria included suspension or withdrawal for some reason. A total of 692 questionnaires were sent out.

**2.2. Ethics and Consent.** This study was approved by the institutional review board of Harbin Medical University and complied with the Helsinki Declaration. Electronic informed consent was given by all participants.

**2.3. Instruments.** The mental health literacy scale, psychological resilience scale, and Kessler psychological distress scale were used to measure the level of mental health literacy, psychological resilience, and psychological distress of college students.

**2.3.1. Mental Health Literacy Scale (MHLS).** The Chinese version of MHLS translated and revised by Ma et al. was used to evaluate the MHL level of college students [14], which contains 35 items and 6 dimensions: ability to recognize specific disorders (8 items), attitudes that promote recognition and appropriate help-seeking (14 items), knowledge of self-treatments (4 items), knowledge of risk factors and causes (4 items), knowledge of how to seek mental health information (4 items), and knowledge of professional help available (1 item). The total score ranged from 35 to 160 points.

The higher scores indicate the higher level of MHL. This scale has been widely used among Chinese students and has good reliability and validity. Cronbach's  $\alpha$  was 0.81 in the previous study [14] and 0.83 in this study.

**2.3.2. The Resilience Scale for Chinese Adolescents (RSCA).** The psychological resilience scale developed by Hu was used to evaluate the psychological resilience level of college students [15]. The scale includes 27 items and 5 dimensions: goal focus (5 items), emotion control (6 items), positive cognition (4 items), family support (6 items), and interpersonal assistance (6 items), with the total score ranging from 27 to 135. The higher the score, the higher the level of psychological resilience. This scale has been widely used among Chinese students and has good reliability and validity. Cronbach's  $\alpha$  was 0.80 in the previous study [15] and 0.86 in this study.

**2.3.3. Kessler Psychological Distress Scale (K-10).** The Kessler psychological distress scale was used to evaluate the occurrence of nonspecific mental health-related symptoms

experienced by college students in the past month, such as anxiety and stress [16]. There were 10 items in the scale, and the total score ranged from 10 to 50 points. The higher the score, the more serious the psychological distress.

A total score lower than 16 indicates no psychological distress, while 16~21 points, 22~29 points, and 30~50 points, respectively, represent mild, moderate, and severe psychological distress. Cronbach's  $\alpha$  coefficient of this scale was 0.89.

**2.4. Procedure.** The study was conducted from 1<sup>st</sup> March to 7<sup>th</sup> March 2022. An online survey platform (<https://www.wjx.cn>) was adopted in the study. The online survey link was distributed by the researchers to all college students who were willing to participate in the study. All data were collected by the WenJuanXing program. In order to improve the accuracy of questionnaire response, the electronic questionnaire was equipped with logic check, error reminder, automatic jump, and other verification procedures.

**2.5. Statistical Analysis.** The Statistical Package for Social Sciences (SPSS)-25.0 was used to analyze the data. The mean and standard deviation of MHL, psychological distress, and psychological resilience of college students were analyzed by descriptive statistics. Pearson's correlation test was used to investigate the relationship among MHL, psychological distress, and psychological resilience. The mediation effect test model of Bootstrap was used to test and analyze the mediating effect of MHL and whether it played a mediating role between psychological distress and psychological resilience. A  $p$  value  $\leq 0.05$  was set as statistically significant.

### 3. Results

After removing invalid questionnaires, 627 valid questionnaires were obtained.

The average age was  $(19.14 \pm 1.68)$  years from 17 to 23 years. There were 214 male students (34.13%) and 413 female students (65.87%). The number of freshmen, sophomores, juniors, and seniors was 159 (25.36%), 175 (27.91%), 166 (26.47%), and 127 (20.26%), respectively.

**3.1. The Total Score and Each Dimension Score of MHL, Psychological Distress, and Psychological Resilience.** The average score of college students' MHL was  $(102.65 \pm 11.97)$  which indicated a moderate level, and the score of psychological distress was  $(22.80 \pm 7.78)$ , among which 147 (23.44%) had no psychological distress, 111 (17.70%) had mild psychological distress, 177 (28.23%) had moderate psychological distress, and 192 (30.62%) had severe psychological distress. The total score of psychological resilience was  $(88.22 \pm 10.18)$  which indicated a moderate level (see Table 1 for details).

**3.2. Correlation Analysis of College Students' MHL, Psychological Distress, and Psychological Resilience.** Pearson correlation analysis showed that psychological distress was

negatively correlated with the total score of mental health literacy ( $r = -0.419$ ,  $P < 0.001$ ) and the scores of all dimensions, and psychological distress was negatively correlated with the total score of psychological resilience ( $r = -0.300$ ,  $P < 0.001$ ) and some dimensions. There was a positive correlation between mental health literacy and the psychological resilience score ( $r = 0.426$ ,  $P < 0.001$ ) (see Table 2 for details).

**3.3. The Mediating Effect of MHL on Psychological Distress and Psychological Resilience of College Students.** Psychological resilience was set as the independent variable, psychological distress was set as the dependent variable, and mental health literacy was set as the mediating variable. Mediation analysis was performed using the SPSS process and bootstrapping to verify the significance of mental health literacy's mediating effects (Table 3 and Figure 1), and psychological resilience was found to have a significant effect of  $-0.230$  psychological distress within the 95% confidence interval. Within the 95% confidence interval, it was found that psychological resilience had a significant effect on mental health literacy by 0.501 and mental health literacy by  $-0.231$  on psychological distress.

Therefore, it can be seen that psychological resilience has a significant effect on psychological distress as much as  $-0.114$  through social support. The ratio of the indirect effect to the total effect was 0.504, which means that 50.43% of psychological resilience's total impact on psychological distress is due to indirect effects through mental health literacy.

### 4. Discussion

To the best of our knowledge, this is the first study to investigate the relationship of mental health literacy, psychological distress, and psychological resilience of college students in China which showed that the mental health literacy has a mediating effect between psychological resilience and psychological distress.

The results of this study show that 76.56% of college students have psychological distress of varying degrees and 30.62% of them have serious psychological distress, which is higher than the previous survey level in the sample of college students [17]. The reason may be that the investigation time of this study is in the postpandemic period. Research revealed that the physical damage caused by some public health emergencies may be recovered soon, but the psychological impact will last for a long time [18]. Due to the continuous pressure of COVID-19, the mental health of college students is not optimistic. Influenced by the pandemic prevention and control measures, the social activities and learning styles of college students have changed and some students cannot adapt to the changes, resulting in negative emotions such as anxiety and depression, which seriously affect their normal life and studies [19]. Therefore, it is necessary to pay close attention to the psychological changes of college students in the postpandemic period and take effective psychological intervention to alleviate negative emotions.

TABLE 1: Scores of mental health literacy, psychological resilience, and psychological distress ( $n = 627$ ).

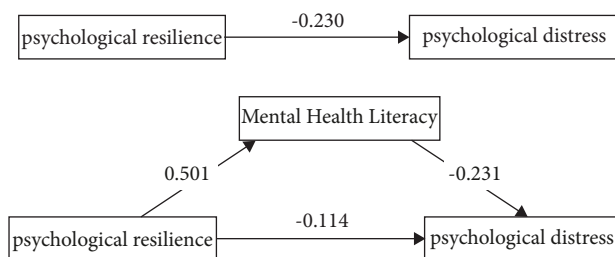
Variables	Scores
<b>Mental health literacy</b>	102.65 ± 11.97
Ability to recognize specific disorders	24.62 ± 4.29
Attitudes that promote recognition and appropriate help-seeking	36.75 ± 8.86
Knowledge of self-treatments	12.78 ± 2.03
Knowledge of risk factors and causes	11.09 ± 1.86
Knowledge of how to seek mental health information	14.38 ± 2.91
Knowledge of professional help available	3.03 ± 0.55
<b>Psychological resilience</b>	88.22 ± 10.18
Goal focus	17.47 ± 3.46
Emotion control	18.80 ± 3.63
Positive cognition	14.68 ± 2.80
Family support	18.60 ± 2.65
Interpersonal assistance	18.65 ± 3.05
<b>Psychological distress</b>	22.80 ± 7.78

TABLE 2: Correlation analysis of mental health literacy, psychological resilience, and psychological distress ( $n = 627$ ).

Variables	Psychological distress	
	<i>r</i>	<i>P</i>
<b>Mental health literacy</b>	-0.419	<0.001
Ability to recognize specific disorders	-0.369	<0.001
Attitudes that promote recognition and appropriate help-seeking	-0.088	0.028
Knowledge of self-treatments	-0.402	<0.001
Knowledge of risk factors and causes	-0.269	<0.001
Knowledge of how to seek mental health information	-0.396	<0.001
Knowledge of professional help available	-0.329	<0.001
<b>Psychological resilience</b>	-0.300	<0.001
Goal focus	-0.509	<0.001
Emotion control	-0.163	<0.001
Positive cognition	-0.526	<0.001
Family support	-0.162	<0.001
Interpersonal assistance	-0.006	0.884

TABLE 3: The mediating effect of mental health literacy on psychological resilience and psychological distress ( $n = 627$ ).

Effect	<i>B</i>	SE	95% CI		Account
			Lower	Upper	
Total effect	-0.230	0.029	-0.287	-0.172	
Direct effect	-0.114	0.030	-0.173	-0.054	49.57%
Indirect effect	-0.116	0.018	-0.151	-0.081	50.43%

FIGURE 1: The mediating effect of mental health literacy on psychological resilience and psychological distress ( $n = 627$ ).

This study found that college students' MHL was at an upper-middle level, which was similar to previous research results [20]. In this study, students from different departments in the medical university were investigated. Some

studies showed that the MHL of medical students was higher than that of students from other majors, and the improvement of MHL level could be promoted during the development of relevant courses [21]. Some scholars define college students' MHL as their mental health concepts, mental health knowledge, skills to promote mental health, concepts to treat patients with mental illness, and knowledge and skills to help others alleviate psychological problems [22]. The scale adopted in this study contains the dimensions involved in the concept, and the results show that the score of attitude is slightly lower than that of foreign studies [23]. Analysis of the reasons may be influenced by a variety of cultural factors; there is still a certain degree of poor perception of mental illness in China, leading to inactive attitudes towards seeking help for mental illness. On the other hand, due to the early development of MHL in foreign countries, effective MHL promotion projects have been implemented among college students to comprehensively improve their MHL level.

In addition, this study found that the score of psychological resilience in college students was  $88.22 \pm 10.18$ , which was similar to the previous studies [24]. As a protective factor, a high level of psychological resilience can help college students adapt to adversity in a special period and deal with emergencies in a positive way [25]. All dimensions

of psychological resilience investigated in this study were high, and the reason may be that the universities investigated in this study have standardized psychological counseling and regularly hold mental health education activities, which were conducive to the development of psychological resilience of college students.

In this study, college students' psychological distress was negatively correlated with their psychological resilience, which was similar to the previous studies. Zhang et al. investigated Chinese college students and found that psychological resilience was significantly correlated with the degree of psychological distress and individuals with high psychological resilience were less likely to have psychological distress [5]. In the face of stressful situations, college students with a high level of psychological distress can actively use their inner psychological strength and many potential favorable factors to adjust their cognition, improve the negative emotions, and reduce the degree of psychological distress. At the same time, this study also found that the level of college students' MHL was negatively correlated with the degree of psychological distress. College students with a high level of MHL have more knowledge and ways of self-help intervention and obtaining professional help for mental illness. Adopting a positive attitude of psychological help can help college students timely identify psychological problems when psychological distress occurs and encourage them to seek help from professional psychological institutions or personnel to solve psychological problems and improve the degree of psychological distress [26]. This study found that there was a significant positive correlation between psychological resilience and mental health literacy, and the higher the level of MHL, the better the psychological resilience, which was consistent with the study of Jia [27]. As the protective factors of promoting mental health, psychological resilience and mental health literacy play an important role in the mental health of college students. Therefore, the cultivation of psychological resilience and MHL should be emphasized in the process of mental health education for college students.

Moreover, our results revealed that MHL affected the psychological distress, which also mediated the relationship between psychological distress and psychological resilience of college students. The higher level of MHL of college students indicates that they understand how to obtain and maintain a positive mental health state, develop positive coping strategies, and improve the level of psychological resilience, so as to actively take actions to help them maintain their mental health level and reduce the occurrence of psychological distress. Previous studies have shown that coping strategies can predict the level of psychological resilience [28].

Adopting a positive coping style can effectively deal with setbacks and improve the ability to resist pressure, so as to maintain a good psychological condition. It is inevitable for medical students to encounter setbacks and difficulties in the process of growth, while medical students with high resilience level are more willing to talk with others or seek help from professionals. Moreover, studies have pointed out that in the development mechanism of resilience, positive and

effective emotional regulation strategies are regarded as an important protective factor, which can help them maintain a good emotional state, experience more positive emotions, develop internal resources, and improve the level of resilience in the face of pressure [29]. Therefore, in the face of the pressure and challenges, college students with high level of psychological resilience can adopt positive and effective emotion regulation strategies, rerecognize and evaluate the pressure and challenge, and maintain and promote the ability of mental health while enhancing the level of mental health literacy, so as to reduce their psychological distress.

From the perspective of positive psychology, the survival and development of college students is a process of constantly facing challenges, as well as a process of growing up in adversity [30]. This study identified the mediating effect of MHL between psychological distress and psychological resilience; therefore, mental health workers should take positive measures to promote college students' psychological resilience and MHL to improve the overall mental health of college students.

*4.1. Limitations.* Although this study investigated the relationship of college students' MHL, psychological resilience, and psychological distress, there were still some limitations to this study. Firstly, the participants of this study were recruited from one university, and readers need to exercise caution when applying our findings to college students from other countries or from different cultural backgrounds. Further studies should be conducted on larger samples in different cultures. Finally, the self-report nature of the scales may be biased and may impact the results.

## 5. Conclusions

The results in this study suggested that the psychological distress of college students was high and was negatively associated with the mental health literacy and psychological resilience. Moreover, this study confirmed the mediating effect of mental health literacy on psychological resilience and psychological distress in college students. The results of this study could help us better understand the relationship between psychological distress, mental health literacy, and psychological resilience. Future studies could add more demographic characteristics and psychosocial factors to further investigate both the mediating effect and moderating effect among these variables.

## 6. Implication for Practice

Healthcare experts should pay attention to the mental health of college students in the postpandemic era. Young people going through difficult times are more prone to suffer from psychological distress. Mental health literacy is critical to improving the mental health of college students. It is recommended that community health advocates and practitioners should develop and implement necessary programs in universities to establish effective mental health service systems. With the improvement of the mental health literacy level of college students, they will master the scientific

knowledge and skills of mental health and will be able to timely identify the symptoms of mental abnormalities and overcome the stigma to actively seek professional help, thus alleviating psychological distress.

### Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

### Ethical Approval

This study was approved by the institutional review board of Harbin Medical University and complied with the Helsinki Declaration.

### Consent

Written informed consent was obtained from all participants.

### Disclosure

Jia-Yuan Zhang and Xiang-Zi Ji are the co-first authors.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Authors' Contributions

Jia-Yuan Zhang and Xiang-Zi Ji conducted the survey, collected and analyzed the data, and wrote the manuscript. Yu-Qiu Zhou was responsible for the conception and design of the study, the review of the literature, and the interpretation of results and edited the article. All authors have read and approved the final version of the manuscript.

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