

# The Factors and Outcomes of Stigma Toward Mental Disorders in Medical Students: A Cross-Sectional Study

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## Research Article

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# Abstract

## Background

Medical students' attitudes toward mental disorders have a large impact on patients' health outcomes. However, there are few studies about stigma toward mental disorders in medical students in China.

## Methods

In this cross-sectional study, 838 medical students completed questionnaires on their sociodemographic characteristics and familiarity with people diagnosed with mental disorders as well as the Community Attitudes toward Mental Illness Scale (CAMI). A multiple logistic regression model was built to explore the relationships among sociodemographic characteristics, familiarity with mental disorders and stigma.

## Results

The total mean score of the CAMI was 137.61 (SD = 15.63). The score for authoritarianism (M = 33.33, SD = 3.62) was the lowest score of the four subscales. Stigma was significantly associated with students' education, area of residence, marital status, economic status, history of mental disorders and contact with people diagnosed with mental disorders.

## Conclusions

Medical students show a negative attitude toward mental illness to a certain degree, especially regarding the view that people with mental disorders are inferior. Higher education level, residence in urban areas, single marital status, better economic status, and better familiarity with mental disorders may be related to less stigma in medical students.

## Background

Currently, mental disorders are the most prevalent diseases around the world. More than 1 billion people (16% of the world's population) were affected by mental and addictive disorders in 2016 [1]. In Japan, 22% of people suffer from any common mental disorder during their lifetime [2]. In China, the weighted 12-month and lifetime prevalence of any mental disorder (excluding dementia) are 9.3% and 16.6%, respectively [3]. However, it is quite common for people to hold negative perceptions toward mental disorders and people with mental disorders. People with mental disorders experience a lack of comprehension from society at large [4], as well as avoidance and discrimination [5]. As the core notion in the topic of negative perceptions toward mental disorders, stigma is a mark of shame, disgrace or disapproval that leads to rejection, discrimination and avoidance.

Stigma consists of public stigma, perceived social stigma and self-stigma. Public stigma refers to public reactions to mental disorders or people with mental disorders [6]. Perceived social stigma refers to a person's belief that society holds prejudicial beliefs toward him or her [7]. Self-stigma refers to the reactions of people toward themselves or their mental disorders [6]. Public stigma may result in people with mental disorders developing self-stigma [8]. Perceived stigma could be internalized to promote self-stigma [9].

High stigma results in poor outcomes. Higher self-stigma was found to be significantly correlated with poorer self-esteem [10]. The experience of stigma was reported to have a significant effect on sleep disturbance and poor quality of life [11]. Most importantly, negative and stigmatizing attitudes toward people with a mental illness were found to be related to less active help-seeking behaviors in the general population [12]. Parents who had children with mental disorders reported a high level of stigma, which was related to poor self-rated health and more chronic conditions [13].

The question of how to decrease stigma has recently been a hot topic. Several researchers have provided knowledge of mental health literacy, emotional management social skills and mental health to adolescents to eradicate stigma [14]. Stigma can be reduced by mass media campaigns, such as the 'Time to Change' program in England [15]. Furthermore, people with mental disorders can benefit from self-help interventions to reduce self-stigma, specifically personal stigma in those with depression [16].

The public, people with mental disorders and their caregivers comprise the majority of participants in previous studies conducted to explore or decrease stigma. However, few studies have focused on medical students. One study pointed out that stigmatization of people with mental disorders is common in mental health professionals and early career professionals [17]. Medical students become medical professionals in the future, and their attitudes about mental disorders have a great impact on their professional attitudes in future clinical practice [18]. Therefore, the exploration of the outcomes and factors of stigma about mental disorders in medical students should not be neglected.

In a previous study, researchers found that women showed less stigmatization than men among medical students [19]. However, another study did not observe a correlation between stigma and gender [20]. Masedo [21] pointed out that stigma was not significantly different between medical students and nursing students. However, one study found that medical students showed more stigma toward patients with self-harm than nursing students [22]. These results suggest that the factors associated with stigma toward mental disorders are not consistent. Moreover, culture has an impact on the stigma of seeking help with mental health [23]. The outcomes and factors of stigma may differ across cultures. However, there are few studies about stigma toward mental disorders in medical students in China. Therefore, we conducted a cross-sectional study to explore the outcomes and factors of stigma toward mental disorders or people with mental disorders in Chinese medical students.

## Methods

# Participants

For this observational study, 838 medical students were recruited by convenience sampling from 18th May 2020 to 24th May 2020 in China. Participants met the following criteria: (a) were full-time college students; (b) were majoring in nursing or medicine; and (c) participated voluntarily.

## Measures

### Sociodemographic characteristics

A self-administered questionnaire was established to collect sociodemographic data, including gender, age, marital status, highest educational level, major, economic status, area of residence and status as the caregiver of an elderly person.

### Familiarity with people with mental disorders

Two dichotomous (yes or no) questions were used to collect participants' familiarity with people with mental disorders. Question 1: Have you suffered from mental disorders? Question 2: Have you ever come into contact with people with mental disorders?

### Community Attitudes toward Mental Illness Scale (CAMI)

The CAMI, a 40-item scale, was developed by Taylor et al [24]. The scale is widely used to assess public attitudes toward mentally ill individuals. The scale spans four domains: authoritarianism, benevolence, social restrictiveness, and community mental health ideology. Authoritarianism refers to a view that people with mental disorders are inferior to people without mental disorders; according to this view, people with mental disorders require a coercive approach [25]. Benevolence refers to a sympathetic view of people suffering from mental disorders [25]. Social restrictiveness is the view that as a threat to society, people with mental disorders should be avoided [25]. Community mental health ideology refers to the acceptance of community-based care for people with mental disorders [25]. Each item is scored on a scale from 1 (strongly agree) to 5 (strongly disagree). The total score is calculated by adding scores of all items. A higher score indicates more positive attitudes toward people with mental disorders. The Cronbach's alpha coefficients of the four dimensions were 0.68–0.88 [24]. In our study, the Cronbach's alpha coefficient of the CAMI was 0.90, and the values for the four dimensions ranged from 0.49–0.77.

## Data collection

The researchers input the questionnaires in WJX, an online survey platform. Then, the questionnaire link was sent to college students individually via their WeChat accounts (a social software similar to WhatsApp). Students could voluntarily participate in the survey. Meanwhile, students were encouraged to share the link with their schoolmates. To avoid invalid repeats, the questionnaires could be completed only once by each WeChat ID. To increase the completeness of questionnaires, students could return to continue to fill out the questionnaire even if they exited the link. Moreover, key features such as the requirement for “full-time college students only” were highlighted in bold red font to avoid invalid responses. This study was approved by the Ethics Committee of one Tertiary Hospital. Online informed consent was obtained from all participants. The information of all participants was anonymous, and each individual had the choice to withdraw from the study at any time.

## Data analysis

Sociodemographics and familiarity with people with mental disorders are expressed as frequencies, percentages (n%), and means  $\pm$  standard deviations (M  $\pm$  SD). Scores of the CAMI and related items are described as means  $\pm$  standard deviations (M  $\pm$  SD). The CAMI score was compared among groups with different sociodemographic characteristic by ANOVA. A multiple linear stepwise regression model was built to explore the factors associated with stigma among college students. The independent variables are listed in Tables 1. The statistical significance level was set at  $P < 0.05$ . All statistical analyses were performed in SPSS version 22.

Table 1  
Sociodemographic characteristics of medical students(n = 838)

Variables	n (%)	CAMI(M ± SD)	F	P
Age <sup>a</sup>	20.25 ± 2.65	-	-	-
Gender				
Male	85(10.1)	139.00 ± 18.32	0.74	0.39
Female	753(89.9)	137.46 ± 15.30		
Marital status				
Married	22(2.6)	136.36 ± 12.92	0.15	0.70
Single	816(97.4)	137.65 ± 15.70		
Education				
Junior college or below	644(76.8)	135.25 ± 14.60	68.83	< 0.001
College or above	194(23.2)	145.46 ± 16.40		
Domicile				
Urban	497(59.3)	140.01 ± 16.52	29.62	< 0.001
Rural	341(40.7)	134.14 ± 13.51		
Major				
Medicine	117(14.0)	145.47 ± 18.36	35.78	< 0.001
Nursing	721(86.0)	136.34 ± 14.76		
Economic status / Monthly household income				
Very poor(1500-2999RMB)	57(6.8)	129.98 ± 12.90	5.98	< 0.001

Note: <sup>a</sup> mean ± standard deviation; CAMI = community attitude toward the mentally illness scale; M, mean; SD, standard deviation; - not Applicable.

Variables	n (%)	CAMI(M ± SD)	F	P
Relatively poor(3000-4999RMB)	189(22.6)	136.50 ± 14.30		
General(5000-9999RMB)	535(63.8)	138.43 ± 15.78		
Relatively well-off (10000 -14999RMB)	55(6.6)	140.47 ± 17.89		
Very well-off(≥ 15000RMB)	2(0.2)	163.50 ± 27.58		
Are you a caregiver of an elderly person				
Yes	111(13.2)	138.14 ± 15.65	0.15	0.70
No	727(86.8)	137.53 ± 15.64		
Have you suffered from mental disorders?				
Yes	6(0.7)	156.5 ± 17.312	8.91	0.003
No	832(99.3)	137.48 ± 15.54		
Have you ever come into contact with people with mental disorders?				
Yes	142(16.9)	141.77 ± 15.52	12.23	< 0.001
No	696(83.1)	136.77 ± 15.53		
Note: <sup>a</sup> mean ± standard deviation; CAMI = community attitude toward the mentally illness scale; M, mean; SD, standard deviation; - not Applicable.				

## Results

Students' sociodemographic characteristics are shown in Table 1. The mean age of the participants was 20.25 years old (SD = 2.65). Approximately 89.9% (n = 753) of the participants were female. Nursing students (n = 721) accounted for 86% of the participants. Table 1 also shows that the majority of the participants were not caregivers of elderly people (n = 727, 86.8%), did not suffer from mental disorders (n = 832, 99.3%) and had not ever come into contact with people with mental disorders (n = 696, 83.1%). Moreover, the comparison of stigma among different sociodemographic groups is shown in Table 1.

Stigma was significantly associated with education level, area of residence, major, economic status, history of mental disorders and contact with people with mental disorders (Table 1).

Table 2 showed the scores of the CAMI and subscales. The total mean CAMI score was 137.61 (SD = 15.63). The benevolence score (M = 36, SD = 4.88) was the highest of the four subscales. The score for authoritarianism (M = 33.33, SD = 3.62) was the lowest score of the four subscales. Table 3 and Table 4 show the five lowest and highest item scores, respectively. The item with the lowest score was the item 'The mentally ill don't deserve our sympathy' (M = 2.07, SD = 0.90). The item with the highest score was the item 'The best way to handle the mentally ill is to keep them behind locked doors' (M = 3.93, SD = 0.94).

Table 2  
The outcome of CAMI

Scale	Total score (M ± SD)	Item score (M ± SD)
Authoritarianism	33.33 ± 3.62	3.33 ± 0.36
Benevolence	36.00 ± 4.88	3.60 ± 0.49
Social Restrictiveness	34.67 ± 4.83	3.47 ± 0.48
Community Mental Health Ideology	33.60 ± 4.45	3.36 ± 0.44
CAMI	137.61 ± 15.63	3.44 ± 0.39

Note: CAMI = community attitude toward the mentally illness scale; M, mean; SD, standard deviation;

Table 3  
The five lowest scores of items

Item	M ± SD
Item 30: The mentally ill don't deserve our sympathy.	2.07 ± 0.90
Item 14: Increased spending on mental health services is a waste.	2.11 ± 0.91
Item 2: The state should provide more funding on the care and treatment of the mentally ill.	2.13 ± 0.91
Item 18: Society should adopt a far more tolerant attitude toward the mentally ill.	2.19 ± 0.80
Item 34: We have a responsibility to provide the best medical treatment for the mentally ill.	2.19 ± 0.80

Table 4  
The five highest scores of items

Item	M ± SD
Item 31: The mentally ill should enjoy their individual rights.	3.84 ± 0.86
Item 8: Locating mental health institutions in a residential area downgrades the neighbourhood.	3.86 ± 0.99
Item 3: The mentally ill should not be isolated from the rest of the community.	3.89 ± 0.94
Item 21: The mentally ill should not be treated as if they are outcasts of society.	3.91 ± 0.80
Item 25: The best way to handle the mentally ill is to keep them behind locked doors.	3.93 ± 0.94

Table 5 presents the significant outcomes of the linear stepwise regression model. Compared with junior college or below students, college or above students showed a significantly higher CAMI score ( $B = 8.58$ ,  $\beta = 0.23$ ,  $P < 0.001$ ). Compared with urban students, rural students showed a significantly lower CAMI score ( $B = -3.41$ ,  $\beta = -0.11$ ,  $P = 0.002$ ). Compared with married students, single students had a higher CAMI score ( $B = 8.94$ ,  $\beta = 0.09$ ,  $P = 0.007$ ). The CAMI score was positively related to economic status ( $B = 1.87$ ,  $\beta = 0.08$ ,  $P = 0.01$ ). Compared with students who suffered from mental disorders, students who did not presented a lower CAMI score ( $B = -15.53$ ,  $\beta = -0.08$ ,  $P = 0.01$ ). Compared with students who had come into contact with people with mental disorders, students who had not come into contact with people with mental disorders showed a lower CAMI score ( $B = -3.19$ ,  $\beta = -0.08$ ,  $P = 0.02$ ).

Table 5  
Multiple linear regression analysis with CAMI as dependent variable (n = 838)

Variables	B	SE	$\beta$	T	P	95%CI
Constant	145.96	14.62		9.98	< 0.001	[117.23, 174.63]
Education level <sup>a</sup>	8.58	1.33	.23	6.43	< 0.001	[5.96, 11.20]
Domicile <sup>b</sup>	-3.41	1.11	-.11	-3.07	0.002	[-5.59, -1.23]
Marital status <sup>c</sup>	8.94	3.30	.09	2.71	.007	[2.46, 15.41]
Economic status	1.87	0.76	0.08	2.46	.01	[0.38, 3.35]
Have you suffered from mental disorders? <sup>d</sup>	-15.53	6.11	-.08	-2.54	.01	[-27.51, -3.54]
Have you ever come into contact with people with mental disorders? <sup>d</sup>	-3.19	1.39	-.08	-2.29	.02	[-5.92, -0.46]
R <sup>2</sup> = 0.115, R <sup>2</sup> adj = 0.109						
Note: CAMI= community attitude toward the mentally illness scale;						
Reference: a Junior college or below; b Urban; c Married; d Yes.						

## Discussion

In this study, we aimed to explore the outcomes and factors of stigma toward mental disorders or people with mental disorders in Chinese medical students. Overall, medical students showed stigma toward mental disorders or people with mental disorders. We found that stigma was significantly associated with the student's education, area of residence, marital status, economic status, history of mental disorders and contact with people with mental disorders.

The study revealed that medical students experienced stigma toward mental disorders or people with mental disorders. Similar to a previous study, medical students held a somewhat negative attitude toward mental disorders [25]. In the study, authoritarianism was the lowest-scoring subscale of the CAMI. Authoritarianism refers to the view that people with mental disorders are inferior to people without mental disorders. The results suggested that medical students believe that people with mental disorders are inferior. A previous study also confirmed that 43.8% of the students agreed that one of the main causes of mental illness is a lack of self-discipline and willpower [26]. The benevolence score was the highest-scoring subscale of the CAMI (M = 3.93, SD = 0.94), which suggested that most students could hold a sympathetic view toward people with mental disorders. In total, stigma toward mental disorders is high in

medical students. In addition to the arranged psychological and psychiatric curriculums, schools could organize seminars about stigma and play short videos about stigma to decrease students' stigma toward mental illness [27].

The study confirmed the relationship between stigma and an individual's socioeconomic status. In the past literature, researchers have usually considered education and income as indicators of socioeconomic status [28, 29]. First, the study revealed that college students showed more positive attitudes toward mental disorders than students in junior college or below. This result is consistent with another study showing that people with higher education showed a more favorable attitude toward people with mental disorders [29]. In contrast, one study pointed out that years of medical education was not significantly associated with medical students' attitudes toward mental illness [30]. This result may be due to a ceiling effect. In the first year of training, students show a positive attitude in social acceptance [30]. Hence, in Chiles's study, education level was not a factor of stigma. In addition, better economic status was related to less stigma toward mental disorders. This result was similar to Letovancova's [31] result that socioeconomic status influenced attitudes toward people with mental illness. Overall, students with better socioeconomic status showed more positive attitudes toward mental disorders. A possible reason is that higher socioeconomic status means higher health literacy [32]. Schools could provide more accessible ways (such as websites and films) to provide abundant knowledge about mental disorders to students, especially students with low education levels and incomes.

The study also revealed that urban medical students hold more positive attitudes toward mental disorders than rural medical students. Another study also pointed out that the level of stigma toward mental illness was significantly higher in rural areas than in urban areas [33]. Ndetei [34] also found that living in rural areas was a stigma marker related to adolescent cannabis use. What cannot be ignored is that levels of access to mental health care services are vastly different between urban and rural residents [35]. People living in rural areas showed lower mental health literacy than people living in urban areas [36]. The study confirmed that the important issue of improving health literacy in rural areas in China is urgent and challenging.

In our study, a single marital status was associated with a positive attitude toward mental disorders. This result was inconsistent with another study showing that married people have a more tolerant attitude toward people with mental disorders than single people [37]. However, marital status had no significant relationship with attitude toward people with mental illness among medical students in Oman. The discrepancy is interesting and worthy of further exploration. Although marriage is beneficial to people in promoting them to progressively accept different and unique people [37], it cannot explain the relationship between marital status and stigma in our study. A possible reason may be that participants were younger in our study, resulting in a shorter marriage experience. Reviewing previous literature, few studies have focused on the relationship between marital status and stigma in medical students. In our study, the number of married students was small. In the future, researchers could recruit more married students to confirm the relationship between marital status and stigma.

Similar to a previous study, medical students' stigma was related to familiarity with people with mental disorders. Compared with students who had suffered from mental disorders, students who had not presented higher stigma. Compared with students who had come into contact with people with mental disorders, students who had not showed a higher stigma. This result agreed with our earlier observations, which showed that people with higher familiarity were related to less stigma [38, 39]. However, a few studies have pointed out that more familiarity is positively associated with a higher level of stigma [40, 41]. A paper that reviewed previous literature pointed out a new opinion that familiarity is associated with stigma in a U-shaped curve [42]. According to this paper, in the low range of familiarity, familiarity was negatively associated with stigma, but once familiarity increased over an inflection point, familiarity was positively associated with stigma [42]. These results suggested that for many students, stigma may decline with increased contact with mental disorders or people with mental disorders. Furthermore, for students with high familiarity, such as children of people with mental disorders, contact may not have a significant impact on students' stigma.

## Limitations

The study has several limitations. The participants were recruited by convenience sampling online. There may be a selective bias resulting from the nonresponse of students with heavy stigma toward mental disorders or students with mental disorders. Moreover, the majority of the sample was female students and college or below students. Therefore, the current sample may not reflect the reality of medical students. Random sampling and the inclusion of more male students will be considered in future studies. Another limitation is that the study is a cross-sectional study, which cannot determine the protective or risk factors for stigma toward mental disorders. Last, the study only focused on sociodemographic characteristics and familiarity with people with mental disorders as potential factors of stigma toward mental disorders. In future studies, researchers could explore more factors of stigma in medical students, such as whether they have an experience of rotation or internship in psychiatric departments.

## Conclusions

The large cross-sectional sample provides significant evidence of the outcomes and factors of stigma toward mental disorders in medical students in China. Medical students also show a negative attitude toward mental illness to a certain degree. Medical students hold an especially negative view that people with mental disorders are inferior. Most importantly, student stigma is significantly associated with student education, area of residence, marital status, economic status, and familiarity with people with mental disorders. Besides the regular Psychiatry, college or university could provide more curriculums or activities about mental disorders to decrease negative attitudes toward mental disorders in medical students. Although the study enhances the literature on medical students' stigma, more studies should explore the controversial factors of stigma to improve stigma in medical students.

## List Of Abbreviations

CAMI

Community Attitudes toward Mental Illness Scale.

## **Declarations**

### **Ethics approval and consent to participate**

The study was carried out in accordance with the principles stated in the Declaration of Helsinki. The study was approved by the ethics committee of the West China Hospital, Sichuan University (No.686, 2019). Online written informed consent was obtained from all participants. Individuals had the choice to withdraw from the study at any time. To ensure the anonymity of participants, researchers report the data in aggregate and do not report the patients' identities.

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

The authors confirm that the data supporting the findings of this study are available within the article. The corresponding author may be contacted for further data sharing: Ya Wang, 147493818@qq.com.

### **Competing interests**

The authors declare that they have no competing interests.

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### **Authors' contributions**

NM and YW were the major contributors in the design of the study, and writing and revising the manuscript. XH and JJW contributed to the implementation of the study. MMW contributes to the analysis of the results.

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