



Comparative Study on the Mental Health Status of Medical Undergraduates in Guangdong Province

BY

Hou Yongmei^{1*}, Li Xuelin¹, Zhong Hongyu¹

¹Department of Psychology, School of Humanities and Management, Guangdong Medical University, Zhanjiang City, Guangdong Province, China



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Abstract

Objective To explore the status of mental health of medical college students, and analyze the main demographic factors. **Methods** A stratified random sampling was used to select 2374 medical undergraduates from 7 medical universities in Guangdong Province, China. They were investigated with Symptom Checklist 90 (SCL-90) and a self-compiled questionnaire on general personal information, and then compare their scores with the national youth norm and similar research results in other regions of China. **Results** (1) The total score of SCL-90 and the scores of 9 factors in this group were significantly higher than the national youth norm ($U=6.11-11.74$, all $P<0.01$). (2) The scores on two factors like depression and paranoid ideation were significantly lower than the national college student norm ($U=-3.56, -6.33$, both $P<0.01$), while the scores on other five factors like obsessive-compulsive, interpersonal sensitivity, anxiety, phobic anxiety, and psychoticism were higher than the national college student norm ($U=2.97-7.89$, all $P<0.01$). (3) The score of paranoid was lower than that of medical students from another region at home ($U=-5.73$, $P<0.001$), while the scores of the other eight factors were significantly higher than those of medical students from other regions at home ($U=6.29-27.88$, all $P<0.001$). (4) Except for depression and anxiety, boys scored lower than girls in all other factors ($U=2.14-9.61$, all $P<0.05$). (5) Except for depression and anxiety, there were significant grade differences in scores of all other factors ($|F|=3.90-13.93$, all $P<0.01$). (6) There are significant inter-school differences in all 9 factors ($|F|=6.51-51.08$, all $P<0.01$). **Conclusion:** The mental health of medical students in Guangdong Province is relatively low, and regional economic and cultural characteristics, as well as school training methods, maybe the two sorts of important influencing factors.

Keywords: Medical students; Mental health; Norm; Stratified random sampling

1. Introduction

The mental health of college students has been a topic of great concern in recent years. In recent years, the mental health status of college students has been declining, and the incidence of psychological disorders has been increasing year by year [1-3]. The mental health status of college students not only affects their physical and mental health [4], interpersonal communication [5], personality and social development [6], as well as social adaptation [5, 7], but also affects family harmony [8] and social stability [8]. Medical students are a special group among college students, who not only face heavy learning tasks but also have their own unique careers after graduation. In addition, Guangdong Province has a special geographical and economic environment. Do all of these conditions have an impact on the mental health of medical college students? This article aim to explore the mental health status of students from seven medical colleges in Guangdong Province, and analyzes the influencing factors, providing a basis for promoting the physical and mental health of medical undergraduates.

2. Objects and Methods

2.1 Objects

A stratified random sampling is used to select undergraduates from 7 medical colleges in Guangdong Province, including Guangdong Medical University, Sun Yat Sen University School of Medicine, Southern Medical University, Guangzhou University of Traditional Chinese Medicine, Guangdong Pharmaceutical College, Shantou University School of Medicine, and Guangzhou Medical College. A total of 2400 questionnaires are distributed, and 2374 valid questionnaires are collected, with an effective rate of 98.8%. There are 1096 males and 1278 females; 499 students from Guangdong Medical College, 100 students from Sun Yat-sen University, 384 from Southern Medical University, 356 from Guangzhou University of Traditional Chinese Medicine, 672 from Guangdong Pharmaceutical College, 46 from Shantou University Medical College, and 317 from Guangzhou Medical College; 584 freshmen, 601 sophomores, 663 juniors, and 526 seniors.



2.2 Tools

2.2.1 Symptom Checklist 90, SCL-90

Compiled by Derogatis LR [9], and revised by Chen Changhui [10] into the Chinese version. This scale has 90 items, divided into 10 factors, namely somatization (SM), obsessive-compulsive (OC), interpersonal sensitivity (IS), depression (DP), anxiety (AX), hostility (HS), phobic anxiety (PA), paranoid ideation (PI), psychoticism (PY), and additional factors (AF). Due to the broad and unclear meaning of the additional factors, the content is often not included in research. The Likert 5-point scoring method is used to score from 1 to 5 points corresponding to "never" to "severe". The higher the score, the more severe the symptoms. Individuals with a factor score ≥ 2 are considered to have positive symptoms. In this study, the Cronbach's α coefficient of the full scale is 0.835, and the Cronbach's α coefficient of each factor is 0.758 to 0.789.

2.2.2 General personal information questionnaire

It includes three items, namely gender, grade, and school name.

2.3 Data processing

SPSS 20.0 statistical software is used for data analysis, and the main statistical methods include U-test and F-test.

3. Results

3.1 The percentage of positive symptoms for each factor

The percentage of positive symptoms for each factor is as follows: obsessive-compulsive symptoms (39.7%), interpersonal sensitivity (27.5%), hostility (14.4%), paranoid ideation (13.6%), depression (12.4%), anxiety (11.2%), phobic anxiety (7.8%), somatization (4.5%), and psychoticism (4.2%).

3.2 Comparison of SCL-90 scores between medical college students in Guangdong Province and the national youth norm

Table 1 shows that the scores of 9 factors in SCL-90 among medical students in Guangdong Province are higher than the national youth norm, and the differences are statistically significant ($U=6.11$ to 11.74 , all $P<0.001$).

Table 1 Comparison of SCL-90 scores between medical students in Guangdong Province and the National Youth Norm ($\bar{X} \pm s$)

Factor	A (n=2374)	B ^[11] (n=781)	U	P
SM	1.57±0.59	1.34±0.45	6.97	<0.001
OC	2.10±0.69	1.69±0.61	11.74	<0.001
IS	1.97±0.69	1.76±0.67	7.11	<0.001
DP	1.79±0.62	1.57±0.61	6.31	<0.001
AX	1.78±0.68	1.42±0.43	10.19	<0.001
HS	1.71±0.64	1.50±0.57	6.11	<0.001
PA	1.71±0.68	1.33±0.47	10.83	<0.001
PI	1.77±0.73	1.52±0.60	7.36	<0.001
PY	1.71±0.69	1.36±0.47	10.25	<0.001

Notes: A Medical Students in Guangdong Province, B=National Youth Norm

3.3 Comparison of SCL-90 scores among medical students in Guangdong Province with the National Norm for College Students, and medical colleges in other regions of China.

Table 2 shows that the scores of this group on five factors, including obsessive-compulsive, interpersonal sensitivity, anxiety, phobic anxiety, and psychoticism, are higher than the national college student norm ($U=2.97$ to 7.89 , all $P<0.05$), while the scores of depression and paranoid ideation are significantly lower than the national college student norm ($U=-3.56$, -6.33 , both $P<0.001$); The score of paranoid ideation is significantly lower than that of medical students from Weifang Medical College ($U=-5.73$, $P<0.001$), while the scores of the other 8 factors are significantly higher than those of medical students from Weifang Medical College ($U=6.29$ to 24.63 , all $P<0.001$); The scores on the 9 major factors are higher than those of students from Kunming Medical College, and the differences were statistically significant ($U=9.79$ to 27.88 , all $P<0.001$).

Table 2 Comparison of SCL-90 scores among medical students in Guangdong Province with the National Norm for College Students and medical colleges in other regions ($\bar{X} \pm s$)

Factor	Students and medical colleges in other regions ($\bar{X} \pm s$)						
	A (n=2374)	B ^[12] (n=2685)	C ^[13] (n=856)	D ^[14] (n=616)	U ₁	U ₂	U ₃
SM	1.57±0.59	1.57±0.55	1.33±0.38	1.38±0.44	0.92	11.38*	11.56*
OC	2.10±0.69	2.03±0.66	1.97±0.59	1.80±0.61	3.26*	6.29*	18.34*
IS	1.97±0.69	1.92±0.65	1.82±0.58	1.65±0.58	2.97*	7.13*	20.17*
DP	1.79±0.62	1.91±0.64	1.57±0.53	1.58±0.56	-6.33*	14.36*	13.22*
AX	1.78±0.68	1.68±0.58	1.49±0.49	1.54±1.59	5.92*	17.44*	15.67*
HS	1.71±0.64	1.73±0.69	1.50±0.55	1.53±0.57	1.09	13.18*	9.79*
PA	1.71±0.68	1.54±0.56	1.40±0.46	1.34±0.39	7.89*	19.52*	27.88*
PI	1.77±0.73	1.84±0.63	1.82±0.52	1.49±0.49	-3.56*	-5.73*	16.35*
PY	1.71±0.69	1.61±0.58	1.26±0.37	1.44±0.46	6.77*	24.63*	15.51*

*Corresponding Author: Hou Yongmei



Note 1: A=Guangdong Medical Students, B=National Norm for College Students, C= Students from Weifang Medical College, D= Students from Kunming Medical College

Note2: U₁, U₂, and U₃ represent the comparison between Guangdong medical students and the national norm for college students, students from Weifang Medical College, and students from Kunming Medical College, respectively,

Note 3: *P<0.01

3.4. Comparison of SCL-90 scores between male and female medical students in Guangdong Province

Table 3 shows that male medical students in Guangdong Province score lower than female medical students in following seven factors, including somatization, obsessive-compulsive, interpersonal sensitivity, hostility, phobic anxiety, paranoid ideation, and psychoticism, with statistical significances (U=-2.14-9.61, all P<0.05).

Table 3 Comparison of SCL-90 scores between male and female medical students in Guangdong Province ($\bar{X} \pm s$)

Factor	Male (n=1096)	Female (n=1278)	U	P
SM	1.51±0.54	1.65±0.64	-5.87	<0.001
OC	2.05±0.70	2.15±0.66	-3.74	<0.001
IS	1.94±0.71	2.00±0.68	-2.14	0.039
DP	1.78±0.61	1.80±0.64	-0.71	0.479
AX	1.77±0.69	1.80±0.66	-1.69	0.067
HS	1.60±0.58	1.85±0.69	-9.61	<0.001
PA	1.66±0.64	1.77±0.71	-4.13	<0.001
PI	1.72±0.71	1.83±0.74	-3.98	<0.001
PY	1.68±0.72	1.74±0.65	-2.32	0.025

3.5 Comparison of SCL-90 scores among medical students of different grades in Guangdong Province

Table 4 shows that there are grade differences in the scores of medical college students in Guangdong Province on seven factors, including somatization, obsessive-compulsive, interpersonal sensitivity, hostility, phobic anxiety, paranoid ideation, and psychoticism, with statistical significances (|F|=3.90 to 13.93, all P<0.01).

Table 4. Comparison of SCL-90 scores among different grades ($\bar{X} \pm s$)

Factor	Freshmen (n=584)	Sophomores (n=601)	Juniors (n=663)	Seniors (n=526)	F	P
SM	1.61±0.50	1.52±0.60	1.57±0.60	1.64±0.61	3.90	0.009
OC	2.25±0.60	2.03±0.71	2.09±0.72	2.10±0.59	6.93	<0.001
IS	2.21±0.61	1.97±0.73	1.92±0.72	1.90±0.51	13.93	<0.001
DP	1.85±0.55	1.79±0.65	1.78±0.67	1.77±0.55	2.03	0.185
AX	1.83±0.58	1.77±0.74	1.76±0.69	1.79±0.60	0.83	0.478
HS	1.65±0.52	1.69±0.60	1.70±0.72	1.82±0.62	-5.43	0.001
PA	1.84±0.59	1.64±0.69	1.71±0.68	1.73±0.70	5.98	<0.001
PI	1.95±0.79	1.75±0.71	1.74±0.74	1.76±0.67	6.61	<0.001
PY	1.85±0.76	1.71±0.76	1.65±0.64	1.73±0.61	6.01	<0.001

Further multiple comparisons (Tukey HSD) shows that freshmen and sophomores, sophomores and seniors exhibited significant difference in somatization (P<0.001, 0.007); freshmen, sophomores and juniors exhibited significant differences in obsessive-compulsive symptoms (all P<0.01); freshmen and sophomores, juniors and seniors exhibited significant differences in interpersonal sensitivity (both P<0.001); there were significant differences in the dimension of depression between freshmen and sophomores, juniors and seniors (all P<0.001); there were significant differences in the dimension of anxiety between freshmen and sophomores, freshmen and juniors (both P<0.01); freshmen and juniors, freshmen and seniors, sophomores and seniors, juniors and seniors exhibited significant differences in hostility (all P<0.001); freshmen and sophomores, freshmen and juniors exhibited significant differences in phobic anxiety (P=0.000, 0.029); freshmen and sophomores, freshmen and juniors, freshmen and seniors exhibited significant differences in paranoid ideation (P=0.000, 0.000, 0.003). There were significant differences in the dimensions of psychoticism among various grades (all P<0.001).



3.6 Comparison of SCL-90 scores among medical students from different schools in Guangdong Province

Table 5 shows that there were statistically significant differences in the scores of medical college students from 7 universities in Guangdong Province on 9 factors ($|F|=6.51$ to 51.08 , all $P<0.001$).

Table 5. Comparison of SCL-90 scores among undergraduates from 7 universities ($\bar{X} \pm s$)

Factor	A (n=499)	B (n=100)	C (n=384)	D (n=356)	E (n=672)	G (n=46)	F (n=317)	<i>F</i>	<i>P</i>
SM	1.59±0.66	1.34±0.45	1.64±0.44	1.59±0.59	1.46±0.53	1.63±0.60	1.74±0.73	-12.39	<0.001
OC	2.13±0.71	1.92±0.80	2.36±0.61	2.11±0.67	1.95±0.69	2.09±0.72	2.07±0.62	-16.82	<0.001
IS	2.03±0.72	1.77±0.63	2.34±0.71	1.90±0.66	1.79±0.65	1.97±0.72	1.94±0.61	-30.91	<0.001
DP	1.82±0.68	1.58±0.56	1.97±0.56	1.80±0.63	1.63±0.55	1.88±0.66	1.91±0.65	-17.37	<0.001
AX	1.83±0.72	1.58±0.67	1.83±0.49	1.77±0.69	1.68±0.67	1.80±0.72	1.90±0.76	-6.51	<0.001
HS	1.80±0.78	1.58±0.61	1.73±0.61	1.77±0.66	1.57±0.49	1.86±0.63	1.84±0.69	-10.96	<0.001
PA	1.78±0.65	1.49±0.57	1.98±0.58	1.70±0.68	1.46±0.59	1.73±0.68	1.87±0.81	-33.57	<0.001
PI	1.85±0.83	1.51±0.63	2.08±0.68	1.70±0.70	1.57±0.53	1.86±1.07	1.85±0.79	26.22	<0.001
PY	1.76±0.63	1.49±0.69	2.13±0.77	1.67±0.62	1.43±0.56	1.72±0.69	1.79±0.72	51.08	<0.001

Notes: A=Guangdong Medical University, B=Sun Yat sen University School of Medicine, C=Southern Medical University, D=Guangzhou University of Traditional Chinese Medicine, E=Guangdong Pharmaceutical College, F=Shantou University School of Medicine, G=Guangzhou Medical College

4. Discussion

The results of this study show that medical college students in Guangdong Province score significantly higher than the National Youth Norm on the nine factors of the SCL-90, which is slightly different from the results of Xu Chuanzhi et al [14]. Xu Chuanzhi et al found that there was no significant difference in the scores of interpersonal sensitivity, depression, and paranoid ideation among medical students compared to the general youth. This difference may be due to differences in sampling regions and times [14]. The results of this study suggest that the mental health of medical college students in Guangdong Province is more prominent than those of the general youth. The main reason is that the two groups have different levels of psychological stress and resilience: Although medical students and ordinary young people are facing enormous stress, due to being the "proud sons of the emperor", medical students have greater investment and expectations from the country, society, and family. Therefore, their social responsibility is greater than that of ordinary young people, and their stress will also be higher. However, due to the focus on learning and the lack of psychological training, college students often have poorer coping and bearing abilities, making them more prone to mental problems.

The results of this study show that medical college students in Guangdong Province score significantly higher than the National Norm for college students on eight factors of SCL-90, including somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, and psychoticism, and also higher than two medical colleges outside the province. Contrary to the reports of Shen Xiaoli [13] and Zhu Xianglu [15], it indicates that the mental health status of medical college students in Guangdong Province is lower than the general that of other college students. Possible reasons include: First, lack of effective

mental health education and psychological quality training. Due to frequent and long-term exposure to various types of patients, medical students have a greater understanding of medical and psychological issues, but at the same time feel that they cannot avoid and completely solve these problems, leading to more psychological distress. Second, special learning methods. Medical students have a longer academic system (5-7 years) and need to study more than 30 courses. The learning tasks are already quite heavy, coupled with the rapid updating of medical knowledge and the rapid development of medical technology. Medical students need to constantly update their knowledge reserves and improve their operational skills, with an increasing amount of learning content and difficulty, resulting in increased stress. A considerable number of students are not good at finding patterns of learning and only have mechanical memory. Therefore, their learning methods are relatively single, making learning monotonous, boring, and inefficient. At the same time, the heavy learning tasks limit the time for students to develop freely and engage in independent activities, making them lack entertainment activities. Their learning life is dull and lacks vitality, which can easily induce and exacerbate psychological fatigue [16]. Final, the employment stress is more and more heavy. There are many medical colleges in Guangdong Province (a total of 7), and the continuous expansion of enrollment has led to an increasing number of undergraduates year by year. Although there are a large number of hospitals at all levels and in various types throughout the country, and many grass-roots hospitals in underdeveloped areas are seriously short of staff, most of the medical talents in the country want to work in several economically developed regions, such as Beijing, Shanghai, the Yangtze River Delta, and the Pearl River Delta, which makes the employment stress of medical talents in these regions sharply increase, further increasing the psychological stress on medical students.

The results of this study show that male medical college students in Guangdong Province score significantly lower than female medical college students in eight factors of the SCL-90 scale, including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, anxiety, hostility, paranoia, phobia, and psychosis. This is inconsistent with the research results of Shen Xiaoli [4], suggesting that the mental health status of male medical college students in Guangdong Province is better than that of female medical college students. Previous studies have shown that there is no significant difference in overall intelligence levels between males and females. In terms of language, calculation, aesthetics, and hand flexibility, females have advantages over males; In terms of spatial ability, movement speed, digital reasoning, mechanical operation, and manual operation, males are superior to females [17]. Medical students need to memorize a lot of materials, and there are also many difficult tasks that require deduction, calculation, and hands-on operation. This gives boys a clear advantage in learning. In addition, boys use more positive coping style and reasonable emotional regulation strategies than girls [18], effectively solving problems, reducing stress, and maintaining mental health [19-20].

The results of this study also show that there are significant grade differences in the scores of medical college students in Guangdong Province on seven factors of SCL-90, including somatization, obsessive-compulsive, interpersonal sensitivity, hostility, phobic anxiety, paranoid ideation, and psychoticism. The scores of freshmen in most factors are significantly higher than those of other grades, indicating that the mental health status of freshmen is particularly noteworthy.

Final, this study finds that undergraduates from 7 medical universities in Guangdong Province have significant inter-school differences in the scores on 9 factors of SCL-90, suggesting the mental problems of medical undergraduates in different schools vary, which may be related to the training objectives, teaching requirements, and management methods of various schools.

5. Conclusion

This study preliminarily proves that the mental health status of medical college students in Guangdong Province is not ideal. The scores of the 9 factors of SCL-90 are all higher than the National Youth Norm, and the scores of most factors of SCL-90 are higher than the National Norm of College Students and the scores of medical students from other regions in China. The above differences are closely related to regional economic and cultural characteristics, as well as school training methods. The results of this study suggest that we should combine the regional economic and cultural characteristics of Guangdong Province, school training goals and professional characteristics, improve teaching requirements and management models, strengthen mental health education for medical students, strengthen inter-school communication, learn from each other, and further do a good job in the construction of mental health for medical students.

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