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Investigation and Analysis of Psychological Pressure Status of Medical Postgraduates

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Abstract: This study used the international 12-item general health questionnaire (GHQ-12) to survey 2578 postgraduates in three medical schools in Shanghai. The results show that the psychology of postgraduates in medical schools is generally "sub-healthy." 55.4% of the participants are in a state of excessive psychological stress, and 38.2% of the participants have or are developing into mental illness. Compared with the data published by European scholars, the pressure on graduate students in medical schools in the country is greater, and the psychological "sub-health" is more serious. The above results all remind that schools must strengthen their attention to the mental health of graduate students in the medical school, take practical actions to help them complete their studies with a healthy attitude, and eventually grow into the pillars of socialism.

Keywords: Medical graduate students; Psychological pressure; Source

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1. Introduction

With the rapid development of society, the country's requirements for the quantity and quality of talent cultivation are constantly increasing. Since China continuously expanded enrollment in universities in 1999, the scale of graduate education has maintained a rapid growth trend. According to statistics, there were 1.405 million graduate students in China in 2009, which increased to 1.848 million in 2011, and reached a new high in 2017, totaling 1.981 million people [1]. The healthy growth of young graduate students has always been the focus of education work in universities. To deeply study and implement the President of the CCP's Thought on Socialism with Chinese Characteristics for a New Era and the spirit of the 19th National Congress of the Communist Party of China, and to further promote the effective implementation of the spirit of the National Conference on Ideological and Political Work in Colleges and Universities, all universities should integrate moral education with emotional education, actively advance mental health education, and cultivate a rational, calm, and positive mindset among graduate students.

Medical school graduate students are a unique subgroup within the broader graduate student population. On one hand, the curriculum design and professional pressures make them distinct from other graduate students. According to statistics, the academic and research pressures faced by medical graduate students are the most intense among all disciplines. They not only need to have a solid theoretical foundation in their coursework but also must master advanced professional skills in clinical practice and research. These factors contribute to a significantly higher learning pressure compared to students in other fields. On the other hand, the requirements for obtaining a degree for medical graduate students are relatively high. Medical graduate students, especially doctoral students, face more demanding graduation requirements than students in other basic disciplines, leading to a higher incidence of delayed graduations.

Due to the unique nature of medical graduate students, combined with increasingly fierce social competition, their mental health issues have become more prominent. In fact, some of them have developed serious psychological problems and negative tendencies. Therefore, conducting research on the psychological status of medical graduate students is crucial to providing a scientific basis for mental health education for medical students and to offering effective strategies for promoting their mental well-being.

2. Research objects and methods

2.1. Research objects

The research targets medical graduate students from three universities in Shanghai. The survey questionnaire was conducted using the "Wenjuanxing" platform.

To ensure the breadth and scope of the survey while eliminating differences between universities, before releasing the survey questionnaire, the research team restricted the number of participants, grades, and genders from each university.

According to statistics, a total of 2,578 medical graduate students participated in the survey, including 906 from University A, 832 from University B, and 840 from University C. Among them, there were 1,037 male students and 1,541 female students. The participants included 108 first-year master's students, 297 second-year master's students, 292 third-year master's students, 305 first-year doctoral students, 307 second-year doctoral students, 321 third-year doctoral students, 291 fourth-year doctoral students (direct doctoral students), 291 fifth-year doctoral students (direct doctoral students), and 144 deferred graduate students (all doctoral students). **Table 1** shows the specific numbers and proportions.

Table 1. Status of students participating in the survey

	College A		College B		College C		Total
	Male	Female	Male	Female	Male	Female	
Master's Year 1	46	62	40	61	39	60	308
Second year master's degree	42	65	38	58	36	58	297
Master's Year 3	44	63	35	57	37	56	292
First-year PhD student	41	67	42	63	48	52	313
Second year PhD	44	64	39	58	40	60	305
PhD Year 3	43	63	41	58	41	61	307

Fourth year PhD student	45	66	43	61	44	62	321
PhD Year 5	40	61	35	58	39	58	291
Postgraduate delay	20	30	17	28	18	31	144
Total	365	541	330	502	342	498	2578

3. Research method

This study primarily adopts the globally recognized general health questionnaire with twelve items (GHQ-12), combined with a stress cause analysis scale, to investigate the mental state and sources of stress among medical graduate students. Fortunately, during the progress of this research project, a similar study was publicly published by European scholars, who surveyed over 3,000 PhD students in Flanders, Belgium [2]. That study was also based on the GHQ-12 scale, and its findings can serve as valuable corroboration and reference for this research.

The statistical method employed in this study is primarily the Chi-square test, with the fitting formula being:

$$\chi^2 = \sum_{i=1}^{k} \frac{(f_i - np_i)^2}{np_i}$$

4. Survey results and analysis

4.1. Basic data analysis

To ensure that there is no bias in the data source of the medical graduate students participating in the survey, this study first conducted a statistical analysis of the gender and age of survey participants from different universities before analyzing the data.

4.1.1. No significant difference in gender distribution among universities

In the data collected for this study, the gender distribution among universities is shown in **Table 2**. After conducting a Chi-square test, it was found that $P > 0.05$, indicating no significant difference in gender distribution among the universities.

Table 2. Gender distribution in various universities

	Boys		Girl		Total	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
College A	365	40.3	541	59.7	906	100
College B	330	39.7	502	60.3	832	100
College C	342	40.7	498	59.3	840	100

Note: $P > 0.05$

4.1.2. No significant difference in grade distribution among universities

In the data collected for this study, the grade distribution among universities, stratified by gender, is shown in **Table 3**. After conducting a Chi-square test, it was found that $P > 0.05$, indicating no significant difference in grade distribution among the universities.

Table 3. Distribution of grades in various universities

	Master's Year 1		Second year master's degree		Master's Year 3	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
College A	108	11.9	107	11.8	107	11.8
College B	101	12.1	96	11.5	92	11.1
College C	99	11.8	94	11.2	93	11.1

	First-year PhD student		Second year PhD		PhD Year 3	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
College A	108	11.9	108	11.9	106	11.7
College B	105	12.6	97	11.7	99	11.9
College C	100	11.9	100	11.9	102	12.1

	Fourth year PhD student		PhD Year 5		Postgraduate delay	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
College A	111	12.3	101	11.1	50	5.5
College B	104	12.5	93	11.2	45	5.4
College C	106	12.6	97	11.5	49	5.8

Note: $P > 0.05$

4.2. Overall analysis of mental health status

According to international standards, the GHQ-12 scale consists of twelve indicators, namely, being in a state of chronic fatigue, feeling depressed and difficult to feel happy, suffering from insomnia due to excessive worrying, feeling unable to overcome difficulties, having no interest in life, complete loss of self-confidence, feeling a lack of social presence, being unable to concentrate, overthinking everything, feeling worthless, being unable to make decisions, and avoiding problems.

Among the 2,578 medical graduate students participating in the survey, the proportions of responses to the twelve indicators are shown in **Figure 1**. The top four indicators, in order, are chronic fatigue (71.0%), feeling depressed and difficult to feel happy (59.0%), being unable to concentrate (54.8%), and overthinking everything (50.5%), all of which exceed 50%. This means that among all the graduate students surveyed, more than half of them experience at least one of these four symptoms. Therefore, it can be seen that these symptoms are a common occurrence among medical graduate students.

Figure 1. Proportion chart of the twelve indicators

4.3. Impact of gender factors on the analysis of psychological status

Due to inherent personality differences between men and women and their varying self-perceptions in society, the psychological pressures they endure are also likely to differ [3]. The research team conducted a stratified analysis based on gender. As shown in **Figure 2**, there are no significant differences between men and women in the four indicators of "being in a state of chronic fatigue", "feeling depressed and difficult to feel happy", "being unable to concentrate", and "feeling a lack of social presence." However, notable differences are observed in the other indicators.

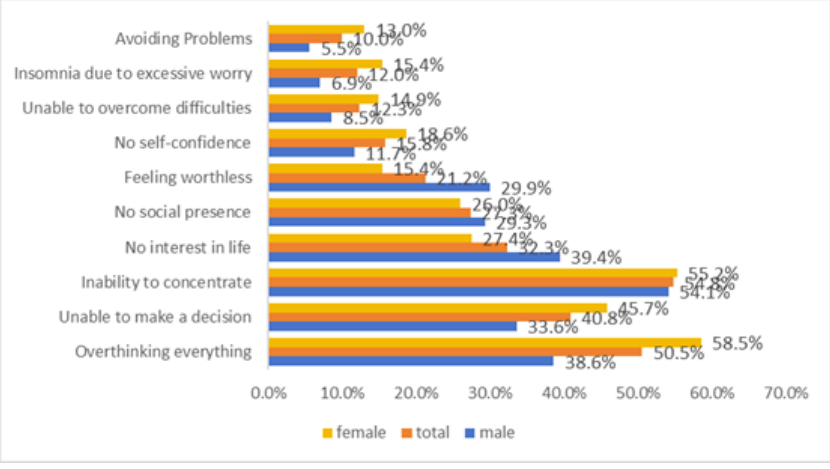

Figure 2. Analysis of the impact of gender on psychological condition

To verify whether these gender differences are statistically significant, the study analyzed the data using the Chi-square test. As shown in **Table 4**, apart from the four indicators mentioned above ("being in a state of chronic fatigue", "feeling depressed and difficult to feel happy", "being unable to concentrate", and "feeling a lack of social presence") where there are no significant differences, the other eight indicators show statistically significant differences. Among them, six indicators, including "overthinking everything", "being unable to make decisions", "complete loss of self-confidence", "feeling unable to overcome difficulties", "suffering from insomnia due to excessive worrying", and "avoiding problems", are significantly higher for females than males. This reflects

that females may have relatively weaker psychological endurance compared to males, which could be attributed to their "delicate and sensitive" personalities. For the two options of "having no interest in life" and "feeling worthless", males score significantly higher than females. This could be due to males potentially bearing more social responsibilities and pressures.

Table 4. Analysis of gender factors on psychological status

	Boys		Girl		Total	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
Being in a state of excessive fatigue for a long time	721	69.5	1109	72.0	1830	71.0
Depressed and having trouble feeling happy	614	59.2	907	58.9	1521	59.0
Overthinking everything	400	38.6	902	58.5**	309	50.5
Unable to make a decision	348	33.6	705	45.7**	318	40.8
Inability to concentrate	561	54.1	851	55.2	832	54.8
No interest in life	409	39.4	423	27.4**	408	32.3
No social presence	304	29.3	400	26.0	704	27.3
Feeling worthless	310	29.9	237	15.4**	1412	21.2
No self-confidence	121	11.7	287	18.6**	1302	15.8
Unable to overcome difficulties	88	8.5	230	14.9**	547	12.3
Insomnia due to excessive worry	72	6.9	237	15.4**	1053	12.0
Avoiding Problems	57	5.5	200	13.0**	257	10.0

Note: $^{**}P < 0.01$

4.4. Risk analysis of psychological diseases

Based on the general diagnostic criteria of the GHQ-12 scale, if a participating student exhibits two symptoms, it can be judged as excessive psychological stress [4]. If there are more than four symptoms, it indicates that the respondent either has or is developing a mental illness. This study analyzed the multiple-choice data from the surveyed students (**Table 5**). Among the 2,578 participants, 1,427 selected two or more symptoms, accounting for 55.4% of the total. The number of people who selected four or more symptoms was 984, accounting for 38.2% of the total.

In the stratified analysis based on gender (**Table 5**), the study found that the number of male students with two or more symptoms was significantly higher than that of female students. However, there was no statistically significant difference between males and females in terms of four or more symptoms.

The above results indicate that: 1) Among the surveyed students, more than half are experiencing excessive psychological stress, with a significantly higher proportion of male students compared to female students; 2) Nearly 40% of students either have or are developing mental illnesses.

Table 5. Gender-related risk analysis of mental illness

	Boy		Girl		Total	
	Number of people	Proportion (%)	Number of people	Proportion (%)	Number of people	Proportion (%)
Two or more	611	59.1	816	53.0*	1427	55.4
Four or more	383	37	601	39	984	38.2

Note: *$P < 0.05$

4.5. Comparative analysis with data published by European scholars

Figure 3 is based on data from a study conducted by European scholars on over 3,000 PhD students in Flanders, Belgium, titled "Work organization and mental health problems in PhD students" [2]. Comparing **Figure 1** with **Figure 3**, the authors find that "being in a state of chronic fatigue" and "feeling depressed and difficult to feel happy" rank in the top two positions, which corroborates the research findings from another perspective. Furthermore, upon comparison, it is evident that the percentages of various stress indicators in the results are generally higher than those reported by European scholars. This suggests that the stress levels of medical graduate students in China are generally higher than those of foreign graduate students. Interestingly, for the indicator "complete loss of self-confidence", the research findings are significantly lower than those of European scholars. This implies that although the graduate students generally experience higher stress, often feeling fatigued and depressed and struggling to concentrate, they have not lost confidence and still have faith in their future research lives.

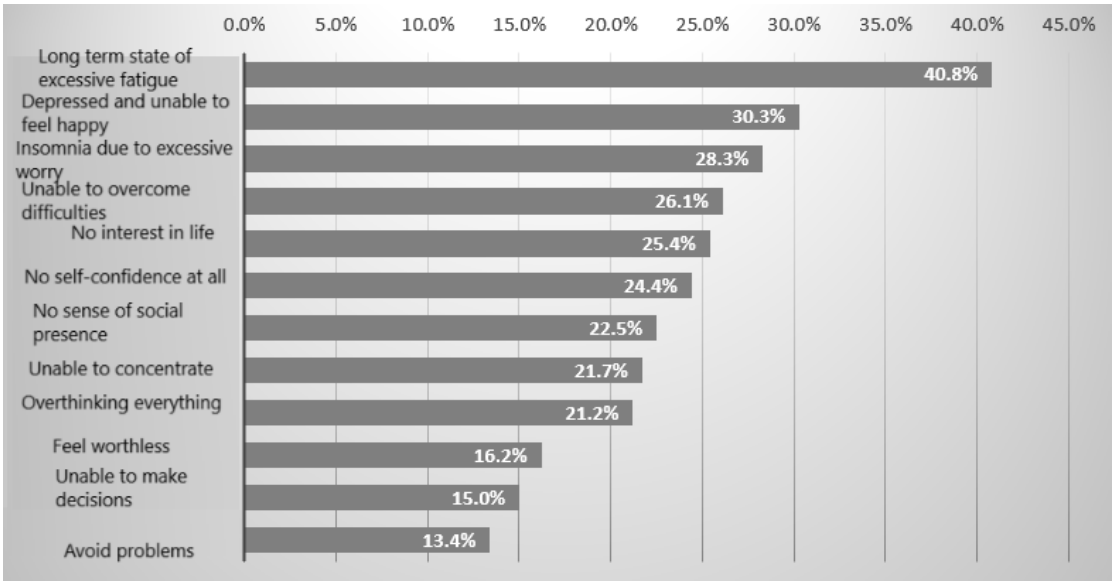

Figure 3. Proportion of the twelve indicators (Literature)

Regarding the risk of psychological illnesses, among the 2,578 participants in the survey, 1,427 reported two or more symptoms, accounting for 55.4% of the total, which is 4.4 percentage points higher than the 51% reported by European scholars. The number of participants who selected four or more symptoms was 984, representing 38.2% of the total, which is 6.2 percentage points higher than the 32% reported by European researchers. This suggests, to some extent, that the stress levels of graduate students in China are much higher than those of

European graduate students, and the severity of psychological conditions among Chinese graduate students is also greater, which deserves our attention.

4.6. Analysis of sources of psychological stress

Based on the analysis of psychological conditions, this study conducted a detailed regression analysis (examining causality and correlation) to identify the reasons for the current situation. The most relevant factors contributing to these symptoms were found to be academics, finances, and interpersonal relationships (including emotional life), which is consistent with reports from related articles [5–7]. Further stratified analysis (**Figure 4**) revealed that in terms of academics, doctoral students face greater stress than master's students due to the increased difficulty of their research topics and the higher requirements for graduation. Regarding financial stress, doctoral students experience more pressure than master's students, and male students face more stress than female students. This may be because doctoral students are typically older, and some may even have families, thus carrying greater family responsibilities and experiencing more pronounced psychological stress. Male students, due to their social and familial positioning, have higher expectations regarding their economic foundation. In terms of interpersonal relationships, male students exhibit greater stress compared to female students. This finding is highly consistent with the research results of Sun Xiaokai [8]. The reason for this may be that male students tend to have a more direct personality and may not handle issues as tactfully as female students.

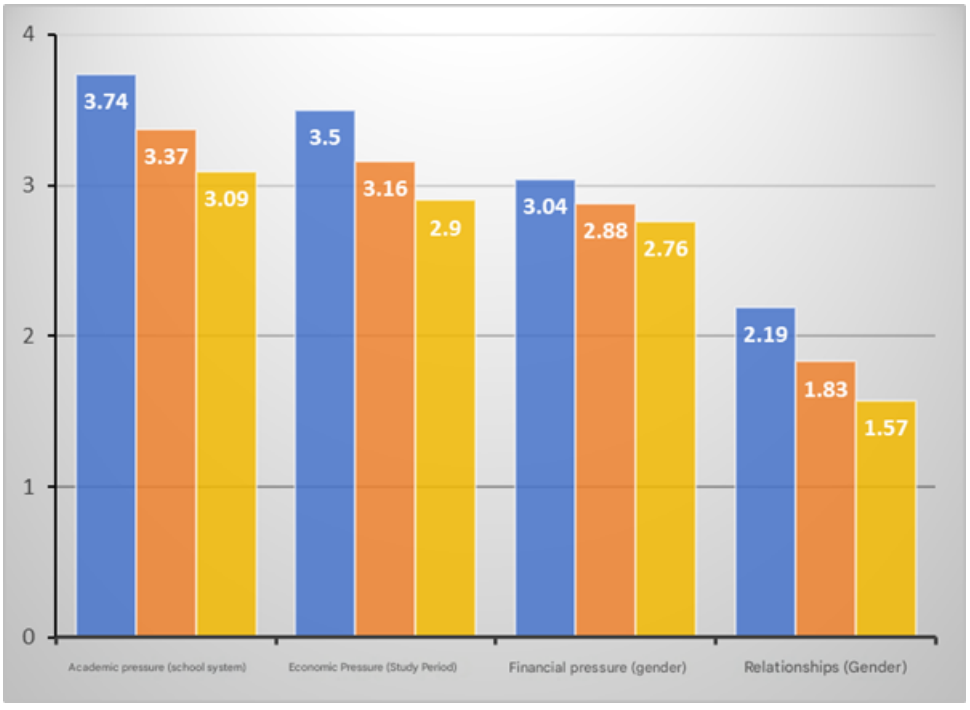

Figure 4. Hierarchical analysis of psychological stress sources

5. Discussion and suggestions

Currently, there are relatively few studies specifically targeting the mental health of medical graduate students both domestically and internationally, yet the psychological status of this group is far from optimistic. According to the longitudinal analysis conducted by Wang Xiaocui and others in 2014, the detection rate of psychological

abnormalities among medical graduate students has been increasing year by year, and the overall scores for depression and anxiety have shown similar trends [9]. Combined with the findings of this study, the authors strongly believe that mental health education for medical graduate students is an urgent, enduring, and challenging task.

To effectively address the mental health education of medical graduate students, it is necessary to integrate the strengths of various departments based on the characteristics of this group, forming a concerted effort across the entire university.

Firstly, schools must cultivate the self-regulation abilities of medical graduate students. As the saying goes, "the bell must be rung by the person who tied the knot." Students should prioritize the cultivation of their self-regulation skills. Only with a "strong heart" can the subsequent work proceed smoothly. Schools need to help them fully leverage their subjective initiative and professional advantages, using their acquired knowledge of physical and mental health to maintain their own psychological well-being, embodying the principle of "healing others by first healing oneself." Simultaneously, schools should assist them in accurately understanding and reasonably positioning themselves, objectively recognizing their actual abilities, and achieving self-actualization based on a multi-faceted, objective, and accurate self-perception, analysis, and evaluation. Additionally, schools should foster their positive and optimistic coping mechanisms. The research has found that when facing difficulties, a significant proportion of medical graduate students tend to experience anxiety, avoidance, and loss of motivation. Avoidance does not solve problems; instead, it only increases psychological pressure.

Secondly, schools must improve the mechanisms for mental health education and counseling. A robust organizational support system can ensure the implementation of various mental health education tasks. Universities should focus on the comprehensive development of individuals, emphasizing not only academic training but also education in areas such as mental activities. Only with physical and mental health can students achieve academic progress, career success, and happiness in life, enabling comprehensive and healthy development. Schools should integrate mental health education resources, refine mental health education promptly, and genuinely incorporate it into the school's mental health education system. Furthermore, they should continue to organize key personnel, improve counseling and consulting mechanisms, and ensure that mental health counseling and consulting services are accessible to every graduate student.

Next, schools need to establish psychological early warning and intervention mechanisms. Compared to graduate students in other majors, medical graduate students possess considerable medical knowledge. Typically, they have the ability to self-regulate and the willingness to seek help. However, when an individual faces difficulties beyond their coping abilities, a psychological crisis may arise. While the number of psychological crises among medical graduate students may be relatively small, their severity can be greater. Universities should establish an early warning and intervention system based on freedom, safety, trust, and understanding, including information collection, assessment, intervention, and feedback. The construction of the intervention system requires the development of a crisis warning system, including a graduate student mental health survey system, a graduate student mental health reporting system, a psychological crisis assessment system, and a graduate student mental health information feedback system. Additionally, a crisis intervention system should be established, featuring measures such as support, treatment, containment, monitoring, and assistance.

Finally, schools must leverage the educational role of graduate student mentors. The current graduate education system in China adopts the European-style mentorship model, which fosters a unique relationship between doctoral students and their mentors. Recently, the Ministry of Education issued the "Opinions on Fully Implementing the Responsibilities of Graduate Student Mentors in Cultivating Virtue and Talent", which clarifies

seven responsibilities for graduate student mentors, one of which is "focusing on the humanistic care of graduate students." Mentors are the first point of responsibility for graduate students and have the duty and obligation to care about their mental health. In a previous study, the authors found that mentors are the decisive force in shaping laboratory culture, and their research achievements, academic influence, academic level, and moral standards directly impact their students. Therefore, mentors' education on mental health can also have a significant effect [10]. Consequently, in the mental health education of medical graduate students, it is essential to fully utilize the guiding role of mentors, integrating professional education with educational nurturing. Mentors should not only serve as guides in academic pursuits but also as leaders in students' lives and ideologies, becoming life mentors for the growth and development of medical graduate students and realizing the educational goal of teaching and nurturing.

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Disclosure statement

The authors declare no conflict of interest.

References

[1] Ministry of Education, 2017, Discipline Construction Keeps Pace with National Development — A Review of Discipline Construction Since the 18th National Congress of the Communist Party of China.

[2] Katia L, Frederik A, Alain DB, et al., 2017, Work Organization and Mental Health Problems in PhD students. Research Policy, 46(4): 868–879.

[3] Gao JX, Shi XJ, 2006, Research on the Differences in Mental Health Between Male and Female College Students. Journal of Tangshan College, 2006(1): 74–76.

[4] Li YM, Li YX, 2015, Multi-sample Analysis of the Structure of the 12-item General Health Questionnaire (GHQ-12). Psychological Exploration, 35(4): 355–359.

[5] Dong SX, 2018, Research on the Psychological Pressure of Graduate Students and Its Influencing Factors. Management and Technology of SMEs (First Edition), 2018(3): 126–128.

[6] Ji X, 2018, Thoughts on College Counselors Carrying Out Student Work. New West, 2018(6): 95–96.

[7] Li H, 2017, Exploring the Psychological Pressure and Coping Strategies of College Students. Western Quality Education, 3(19): 93.

[8] Sun XK, 2012, Survey on the Current Status of Interpersonal Relationships Among College Students. Archives, 2012(9): 67–68.

[9] Wang XC, 2014, Mental Health Status and Influencing Factors of Medical Graduate Students in a Certain University, thesis, Zhengzhou University.

[10] Wang S, Bai G, Luo YX, et al., 2016, Research on the Role of Mentors in the Construction of Laboratory Culture in Medical Institutes. Journal of Higher Education, 2016(16): 213–214 + 216.