INFLUENCING FACTORS OF MENTAL HEALTH MANAGEMENT IN MEDICAL SCHOOLS IN CHINA

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Abstract

The research topic "Influencing Factors of Mental Health Management in Medical Schools in China" this research proposed to 1) study the types of mental health of medical students in Shaanxi province, 2) investigate the significant factors causing mental illness in medical students in Shaanxi province, 3) conduct a structural equation model of mental healthcare management for medical students in Shaanxi province, and 4) assess the model implementation for helping in the mental health management of medical students in Shaanxi province. The study was quantitative and qualitative research and used questionnaires and interview forms for collecting data. The questionnaires were launched to 488 medical students from three medical universities in Shaanxi province in China. The qualitative data was collected with an in-depth interview of 12 teachers and 24 medical students from the sample universities as well. Teachers were the ones who were concerned with students' psychological treatments in three medical universities in the research.

The results revealed that most respondents were females, 65.37%, at the age of 22 – 23 years old, 48.77%, studied in the 2nd year of medical universities, 34.63% , in more-than-one-child families, 69.88% , and parents stay together, 72.54% , having an average income of the family of 3,001-5,000 Yuan, having the latest GPA at 2.6 – 3.0, 38.11% , and students didn't have the congenital disease, 97.75. The results of skewness and kurtosis tests for normal distribution and the relationship between variables used for analysis are suitable for the structural equation model analysis. The structural equation model of mental health management for medical students as $MF = 0.342^{*} ScF + 0.511^{*} SoF$

$+0.567^{*}PF + 0.369^{*}FF$; $R^2 = 0.812$ It shows that school factors, social factors, personal factors, and family factors have positive relations with mindfulness factors. If the school, social, personal and family conditions are good, the mental health of medical students will be good as well. The hypothesis results are accepted. New knowledge of this study seems familiar with other research knowledge, but it's not verisimilitude in detail. Therefore, the new knowledge of this study can apply to make the guidelines for mental health management at medical universities in China.

Keywords: Mental health management; medical school; Health management

Introduction

In 1949, the People's Republic of China was founded. China has the world's second-largest economy and the most populous nation. Over the twentieth and twenty-first centuries, China's healthcare system saw fundamental transformations that involved both public and private medical facilities as well as insurance schemes. In 2020, over 95% of people will have access to some form of health insurance. Two of the fundamental medical insurance schemes are resident medical insurance and employee medical insurance. The employed urban population is included in the first, while the jobless urban and rural populations are included in the second. Employee medical insurance was utilized by a total of 344 million employees and 75% of residents, or 1.017 billion people, who seemed to have basic medical insurance, respectively. (National Healthcare Security Administration, 2022) The Central Committee of the Communist Party of China's "Healthy China 2030" plan states that since 1998, China has developed an increasing number of health technical experts and technical medical graduates. (The China Prospective, 2016) Consequently, the need for doctors in the medical care system is growing up continuously and overwhelmingly.

However, it is a social acceptance and the reputation of the career, there are a lot of students who enter medical school domestically and internationally. Life in medical school is not easy to go through it, there are many challenges and stresses. Due to the complexity of China's health professional education system, medical students must complete 3 to 8-year-long programs.

Additionally, they might well have spent money on programs that took 5 years and 8 years to finish in order to become specialists (Anand et al. , 2008) . Entering medical school is one of the most difficult beginnings of university life, and those who are able to enter and study must be fully ready physically, intellectually, and emotionally. But to graduate from medical school might be more difficult since there are many difficulties for medical students before their graduation. Hence, most often, medical students experience issues with their mental health (Auerbach et al, 2018), with stressful life circumstances producing clinical characteristics (Kessler et al., 2005). There have been many negative effects on medical students, such as interpersonal difficulties, dropping their courses, being expelled from medical schools, and committing suicide. But there were only a few metal-illness medical students asking for advice from professional help (Rotenstein et al., 2016). Mental disorders are states of health that involve modifications to emotion, thinking, behavior, or an assortment of these. Difficulties coping with stress and/or navigating family, work, or social settings are signs of mental illnesses. (Parekh, 2018) Besides, there are many factors concerned with mental health management, such as aspects that are personal, family, academic, and social. The variables used to build the model of managing mental health each have sub-factors. The way of life of the populace has substantially changed since the COVID-19 pandemic's onset. (Taylor, 2019) It has an impact on public mental health evidently(Cui, 2022).

Research Objectives

1. To study the types of mental health of medical students.
2. To investigate the significant factors causing mental illness to medical students.
3. To conduct a structural equation model of mental healthcare management for medical students.
4. To assess the model implementation for helping in the mental health management of medical students.

Literature Reviews

Mental Health Management: Mental health is one of the major works of many institutions and organizations locally, regionally, and globally. Mental

health management follows policy, promotion, directions for mental health purposes. The organization as World Health Organization is the most famous and well-known as global healthcare organization in the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends. It works both for physical and mental health of people. There are six agenda of public health, i.e., for promoting development, fostering health security, strengthening research, information and evidence, enhancing partnerships, and improving performance.

The components of mental health services are shown in figure below;

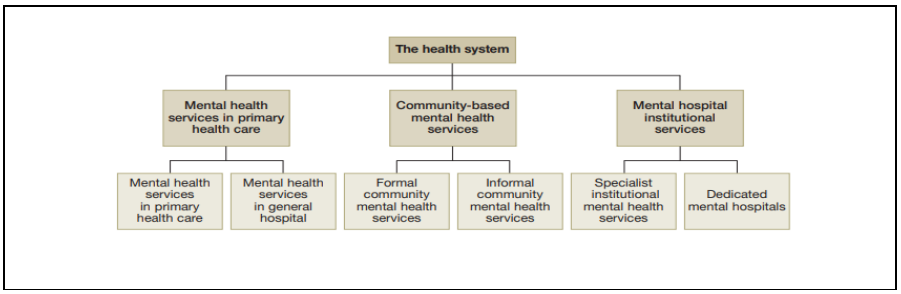

Figure 2: Components of mental health services (World Health Organization, 2003)

However, WHO has promoted both formal and informal healthcare management as shown in figure 1 in community-based mental health services, especially, formal and informal mental healthcare management and organization through private institutions, for example local community group, foundations, schools, universities, companies or private sectors.

Major medical universities in Shaanxi: Shaanxi is a province of the People's Republic of China. It is a landlocked province. It officially belongs to Northwest China part. It borders the province-level divisions of Shanxi, Henan, Hubei, Chongqing, Sichuan, Gansu, Ningxia, and, Inner Mongolia, and covers an area of 205,000 square kilometers with about 37 million people is the sixteenth highest population in China. The province is geographically divided into three parts, namely Northern, Central, and Southern Shaanxi. Northern Shaanxi makes up the southeastern portion of the Ordos Basin and mainly comprises the two prefectural cities of Yulin and Yan'an on the northern Loess Plateau, demarcated from the Ordos Desert and the grasslands of Inner

Mongolia's Ordos City by the Ming Great Wall. Central Shaanxi is also known as the Guanzhong region and comprises the drainage basin of the lower Wei River east of Mount Long and north of the Qinling Mountains, where the majority of Shaanxi's population resides.

Southern Shaanxi comprises the three prefectural cities in the edge of the historical Bashu region south of the Qinling Mountains and includes the three mountainous cities of Hanzhong, Ankang and Shangluo (National Bureau of Statistics of China, 2021)**.** Shaanxi is China's 15th largest economy, ranking within the middle among China's administrative divisions. The fossil fuel and high technology sectors compose the two largest industries in Shaanxi Province. The high technology sector includes aircraft and aerospace industries and Shaanxi produces more than 50%of the R&D and manufacturing equipment for the country's domestic commercial aviation industry. (The China Perspective, 2016).

Research Methodology

The study was designed and used a mixed research approach combining qualitative and quantitative research. Qualitative analysis was conducted using content analysis for the study, and quantitative analysis was conducted using structural equation modeling. The qualitative analysis is to support the quantitative analysis and ultimately to obtain reliable conclusions. The population in the study is 30,084 medical students from three major universities in Shaanxi Province. The samples used in the study by using questionnaire were 395 medical students. The researcher chose 12 teachers who were concerned with students' psychological treatments and 24 medical students from three major universities in Shaanxi Province, equally.

Results

The research revealed the results as follows: there were the analyses of quantitative data and qualitative data, respectively.

Analysis of qualitative data: **Firstly,** data analysis of general information of the respondents consisted of gender, age, study year, number of members of the family, marital status of the parents, average monthly incomes, the latest GPA, and congenital disease, according to Table 1.

Table 4.1 Findings of general information of the respondents

General Information	Number of the respondents	Percentage
Gender		
Males	169	34.63
Females	319	65.37
Age		
18 – 19	76	15.57
20 – 21	125	25.61
22 – 23	238	48.77
24 – 25	46	9.43
Over 25	3	0.62
Study Year		
1st year	145	29.71
2nd year	169	34.63
3rd tear	10	2.05
4th year	70	14.35
5th year	94	19.26
Numbers of Children		
An only child	147	30.12
More than one child	341	69.88
Marital status of the parents		
Stay together	354	72.54
Divorced	5	1.03
Separated	106	21.72
Single parent	12	2.46
Both passed away	11	2.25
Average monthly income of the family		
1000 – 3000	122	25.00
3001 – 5000	185	37.91
5001 – 7000	98	20.08
7001 - 10000	50	10.25
More than 10000	33	6.76
The latest GPA		
Less than 2.00	14	2.87
2.0 – 2.5	92	19.06
2.6 – 3.0	186	38.11
3.1 – 3.5	149	30.53
Above 3.5	46	9.43

Students' congenital disease		
Have	11	2.25
Don't have	477	97.75

Table 1: shows the general information of 488 respondents that the most respondents were shown from the highest to the lowest as the following:

Gender of the respondents were 319 females, 65.37% , and 169 males, 34.63% , respectively. **Age of the respondents:** between 22-23 years old were 238 people, 48.77% , between 20-21 years old were 125 people, 25.61% , between 18-19 years old were 76 people, 15.57%, between 24-25 years old were 46 people, 9.43% , and over 25 years old were 3 people, 0.62% , respectively. **Study year of the respondents:** the 2nd year students were 169, 34.63% , the 1st year students were 145, 29.71% , the 5th year students were 94, 19.26% , the 4th year students were 70, 14.34% , and the 3rd year students were 10. 2.05% , respectively. **Numbers of children in the family:** more than one child in the family were 341 people, 69.88% , and an only child in the family were 127 people, 3012% , respectively. **Marital status of the parents:** stay together were 354, 72.54% , separated were 106, 21.72% , single parent was 12, 2.46% both passed away were 11, 2.25% , and divorced were 5, 1.03% , respectively. **Average monthly income of the family (Yuan):** between 3,001-5,000 yuan were 185 families, 37.91% , between 1,000-3,000 yuan were 122 families, 25.00%, between 5,001-7,000 yuan were 98 families, 20.08%, between 7,001-10,000 yuan were 50 families, 10.25% , and more than 10,000 yuan were 33 families, 6.76% , respectively. **The latest G.P.A. of the medical students:** 186 students or 38.11% had 2.6-3.0 of G.P.A., 149 students or 30.53% had 3.1-3.5 of G.P.A., 92 students or 19.06% had 2.0-2.5 of G.P.A., 46 students or 9.43% had above 3.5 of G.P.A., and 14 students had less than 2.00 of G.P.A., respectively. **Students' congenital disease:** 477 students or 97.75% didn't have the congenital disease, and 11 students or 2.25% had, respectively. The influencing factors survey results showed mean and standard deviation of the overview of five factors in Table 2 below.

Table 2: Mean and standard deviation of the overview of five factors

No:	**Influencing factors**	$\overline{X}$	**S.D.**	**Interpretation**
1	Mindfulness factors	3.89	0.75	High

2	School factors	3.84	0.55	High
3	Social factors	3.63	0.54	High
4	Personal factors	3.96	0.53	High
5	Family factors	3.27	0.61	Moderate

The overview of five factors showed that personal factors, mindfulness factors, school factors, and social factors were at high level, respectively, and family factors were the only factors that was in the moderate level.

Before creating the structural equation model, the data must be verified because it is necessary for the skewness, kurtosis, and normal distribution, as well as the test of the link between elements. The outcomes of the skewness and kurtosis tests would be checked for the five components' normal distribution. The skewness of the factor range was between 0.023-0.614, and the kurtosis of them is between -.055-1.046. According to the measure for the suitability of the structural equation model, the skewness should be between absolute 0.75 (-0.75 – 0. 75) , and the kurtosis should be between absolute 1. 50 (-1. 50-1. 50) . (Hoogland & Boomsma, 1998) The outcomes of the normal distribution's skewness were between 0.023 - 0.614, and kurtosis were between -0.055 – 1.046. Therefore, the outcomes of the normal distribution's skewness and kurtosis tests passed the measure, all factors were under the criteria of the normal distribution. It was able to make the structural equation model analysis correctly and precisely. Furthermore, the relationship between variables of each factor was between the absolute of 0. 80 (-0. 80 – 0. 80) . It did not have multicollinearity, so it was suitable for the structural equation model analysis.

Making the structural equation model analysis was the next step. The result of structural equation model analysis showed the overall model fit measure that Relative Chi-square (χ^2/df) is 3.765. It did not pass the criteria of less than 3.00. Furthermore, GFI is 0.715, RMR is 0.208, and RMSEA is 0.277, all did not pass the recommendations on fit indices. Chi-Square relative should be less than 3.0.GFI should exceed 0. 05. RMR should not exceed . 08. RMSEA should not exceed 0. 05. (Hair et al. , 2010) . It concluded that the structural equation model of mental health management was not fit to the empirical data were shown in the indices; (χ^2/df), GFI, RMR, and RMSEA. Therefore, the model had to be adjusted. Then, the model was adjusted again and the results show that (χ^2/df); 2.566, GFI; 0.923, RMR; 0.044, and RMSEA; 0.039, respectively. All

indices were as the measures of their criteria, and the conclusion was shown in Table 3.

Table 3: Evaluation of Component Fit Measurement of the Structural Equation Model with the Empirical data.

Index	Criteria	Statistical Indices	
		Before adjusting	After adjusting
χ^2/df	<3.0	3.765	2.566
GFI	≥0.90	0.715	0.923
RMR	<0.08	0.208	0.044
RMSEA	<0.05	0.277	0.039

The following stage examined the component fit measure in the measurement model and conducted a validity analysis of each internal observable variable of the structural equation model. This stage could conclude that all values of factor loading are higher than 0.30 and have statistical significance. Moreover, the construct reliability (ρc) was between 0.877 – 0.946, and the average variance extracted (ρv) was between 0.642 – 0.824. Both of these values passed the criteria of the convergent validity, ρc >0.60 and ρv >0.50. (Diamantopoulos & Siguaw, 2000). The structural equation model of mental health management can be modified from the casual relation of all factors. The mindful factor is directly and positively related to other factors as shown in Table 4.

Table 1: An analysis of effects in the structural equation model of mental health management.

Dependent variable	Effect	Independent Variables			
		ScF	SoF	PF	FF
MF	DE	0.342*	0.511*	0.567*	0.369*
	IE	-	-	-	-
	TE	0.342*	0.511*	0.567*	0.369*
	R^2	0.812			

*P<0.05

Table 4: showed that DE is 0.342*, 0.511*, 0.567*, and 0.369*, respectively, and the effects enabled to be explained if the school factor or social factor or personal factor, or family factor were good, the mindfulness factor would be good as well. Furthermore, the structural equation model of mental health management was valid since R^2 was 81.20% . The measure of R^2 should exceed 40% . (Saris &

Strenkhorst, 1984). Hence, the structural equation model of mental health management for the medical students as below:

$$\mathbf{MF = 0.342^{*}ScF + 0.511^{*}SoF + 0.567^{*}PF + 0.369^{*}FF;\ R^2 = 0.812}$$

The results of the above quantitative study led to the verification of the hypothesis. All results are shown below:

H1: Mindfulness has a positive impact on mental health. The outcome of the hypothesis evaluation showed that mindfulness-related components had a positive impact on mental health. The Path Coefficient is all positive, 0.342^{*}, 0.511^{*}, 0.567^{*}, and 0.369^{*}, respectively ($P<0.05$) which accepts the hypothesis.

H2: School factors have an impact on mental health. The outcome of the hypothesis test demonstrates that school-related elements have a favorable effect on mental health. The Path Coefficient is 0.342^{*} ($P<0.05$) which accepts the hypothesis.

H3: Social factors have an impact on mental health. The outcome of evaluating the hypothesis revealed that social elements had a favorable effect on mental health. The Path Coefficient is 0.511^{*} ($P<0.05$) which accepts the hypothesis.

H4: Personal factors have an impact on mental health. The outcome of the hypothesis test demonstrates that individual factors have a favorable effect on mental health. The Path Coefficient is 0.567^{*} ($P<0.05$) which accepts the hypothesis.

H5: Family factors have an impact on mental health. The outcome of the hypothesis test, family factors are beneficial to mental health. The Path Coefficient is 0.369^{*} ($P<0.05$) which accepts the hypothesis.

H6: Social factors have a relationship with school factors.

The outcome of hypothesis testing shows that social factors have a relationship with school factors. The Path Coefficient is 0.511^{*} ($P<0.05$) which accepts the hypothesis.

H7: Social factors have a relationship with personal factors. The outcome of hypothesis testing shows that social factors have a relationship with personal factors. The Path Coefficient is 0.511^{*} ($P<0.05$) which accepts the hypothesis.

H8: Family factors have a relationship with personal factors. The outcome of hypothesis testing shows that family factors have a relationship with

personal factors. The Path Coefficient is 0.369^{*} ($P<0.05$) which accepts the hypothesis.

H9: Family factors have a relationship with school factors. The outcome of hypothesis testing shows that family factors have a relationship with school factors. The Path Coefficient is 0.369^{*} ($P<0.05$) which accepts the hypothesis.

Analysis of qualitative data: An analysis of qualitative data is conducted from the data collected from the interview of 12 teachers who were concerned with students' psychological treatments and 24 medical students from three major universities in Shaanxi Province, equally. The interview form consisted of 9 questions. The results of the interview can be concluded as the following:

1) The mental health of medical students is affected mostly by their parents, especially single moms or single dads' families. Moreover, the economic conditions of each family are quite crucial to be considered as the factor that affects their study, because some additional expenses during the course until graduation are needed. It makes students worry about their further studies year by year. Universities try to find scholarships and funding for them.

2) Most students do not notice that they have mental problems while studying. They have just thought that it's quite normal to be affected because the medical schools are the hardest places with high competition. So far, they have hidden their problems from their advisors, the instructors, or even their friends. They deny talking about their problems at universities with their parents because it's understandable that their parents cannot help them at all, they might blame them either.

3) Medical students from rural areas have the chance to have weak mental health than ones from the cities because they are not used to the lives with high competition. Some think that they have more chances than the ones who are born from rich families in the cities. Moreover, some are under pressure on the requirements of their scholarships, for example, the GPA requirement of each term.

4) The overall mental health level of medical students is mostly at the first stage of anxiety disorders and mood disorders. Most of them cannot eat properly and punctually. They face eating problems neither more nor less. They

are easy to gain and lose weight at the same time. However, personality disorders might be found when they stay with their roommates, for example, shouting at each other without reason, scolding their neighbors while studying late at night, or crying or screaming while they are stressed.

5) According to the records of five-year statistics, it shows that there is about 7-10% of first-year medical students cannot stand their new lives at medical universities, so some resign, and some will be dismissed one year later. But the case of first-year students will not be serious as the higher ones because it is just the beginning. The worst-case for medical students regarding their mental health is that they cannot handle all problems at the same time, for example, study problems, personal problems; heartbreak, quarreling with friends, losing their scholarships, family problems, and so on. Some medical students cannot graduate and get post-traumatic stress disorder, especially during their internship at the hospitals.

6) Mostly the tests and examinations make all medical students getting panic, but it is not severe. They understand their situations during the tests and examinations. The universities try to catch them up in case of getting low scores or grades. But serious problems sometimes occur when they do practical examinations, for example in the gross anatomy, the operation, and lab tests.

7) Mental health and psychological problems are based on many conditions that sometimes are quite difficult to diagnose without the corporations of the students and some information from their parents and friends. All problems mostly are mixed up and hard to identify which are the most concerned with mental health. For instance, most first-year medical students from rural areas feel homesick while staying at the dormitory because they never live alone and far away from their families. So, friends are the most important for them. But it's quite strange that they can adjust themselves within 3-4 months after studying. They cannot avoid the pressure and stress while studying at medical schools. Sometimes the advisors have to call their parents not to force and blame them much because it increases their pressure and stress indirectly. Therefore, family conditions are quite a prior factor in medical students' mental health problems. It concerns many aspects of them, for example, their background, economic conditions, or even the mental health problems they have got from their family.

8) Actually, it is quite confidential to answer this type of question, which group of medical students is the riskiest one, and easy to have mental health problems. There are many factors involved with their mental health problems, family, school, society, personality, etc. However, it is necessary to inspect them closely because sometimes they are quite fragile, and hard to identify when or how they have mental health problems. However, the universities try to conduct a mental health section for helping medical students to realize and diagnose them term by term.

9) Definitely, a mental health course is very vital to both students and teachers because not only students but also teachers have mental health problems. It is necessary to have the center of the mental health intervention, including some psychiatrists or mental health specialists who can help them all the time. Finally, it can be summarized that factors that affect medical students' mental health are family, school, social and personal factors. They realize that family factors are a prior to mental health directly.

Discussions

The mental health problems of medical students in three major universities are about 7-10% but it is not severe and causes some effects on their study. The mindful factors have a positive impact on mental health. That means it is helpful for concentrating on the study and useful for creating ideas. The study of Dagbag, J., Culzon, H.G., and Bete, A. studied ' College Students' Problems and Their Link to Academic Performance: Basis for Needs-driven Student Programs' in 2019, and Trinh, LTT., et al., 'Factors Affecting Academic Performance of First-Year University Students: A Case of a Vietnamese University' in 2020 are consistent that the mental health problems affected academic performance and whether the medical students understand their mental health would be helpful to improve their study performance and to achieve their study in the future.

School factors have an impact on medical students' mental health. Because the medical program itself has high competition and the duration of its professional study is longer than in other programs. So, it makes them much more stressful as well, including the study pressure that occurs regularly both in

class and inward (hospitals) as well as in practical classes. They mostly concentrate on their study for getting good grades purposely for their future professions. Furthermore, medical students have to keep interpersonal relationships for making social links among their friends, partners, and instructors, who are mostly senior doctors. It is in line with research on Zada, M. et al. Students at universities suffered academically from mental health issues.

Social factors have an effect on one's mental well-being medical students. They cannot stay alone while studying, so making friends with other medical students and people in the medical line, for example, their senior students, doctors, nurses, and medical personnel is the key to success. Moreover, being employed in good or well-known hospitals is one of their major goals. Therefore, it is imperative for them to study diligently and carefully. The environment, such as the COVID-19 outbreak, and current events could have an impact on one's mental health, as the studies of Allen, S. F. , Stevenson, J. , Lazuras, L. and Akram, U., and Li, L. et al., social factors are the risk factor that harms people's mental health.

Personal factors have an effect on the psychological well-being of medical students. There are two things that medical students always carefully behave that are controlling their emotions publicly and trying to understand their emotional changes. Since their daily lives are quite tough and their status is clearly social respect. Therefore, they have to behave professionally and stressfully at the same time. It is consistent with the study of Scherer, S., Talley, C.P., and Fife, J. Students' personal factors affected their mental health and their achievement. Conversely, mental illness, such as depression, affected people's life and functionality as the study by Firat, M. et al.

Family factors have an impact on the mental health of medical students. Different family status affects their mental health and their study distinctly. Sometimes finding a scholarship makes them stressed. It is concerned with the economic status of their families. It is consistent with the study of Vakihiheris, S. and Moheb, N. The diseases' psychopathology emphasizes through parental psychological control and personal maladaptive perfectionism, a child's parents' maladaptive perfectionism foreshadows the onset of obsessive-compulsive disorder. Family status, including the economic condition of their family, and

the relationship among members of their family are factors that affect their psychological state.

New Knowledges

Personal factors: self-awareness and self-control of medical students are factors that affect their mental health. 1) Social factors: friends are more important than companions or colleagues. 2) Family factors: problems with members of the family and family status are affected to medical students' mental health deeply and overwhelmingly. 3) School factors: actually, making good grades and studying pressure are normal problems and make students' mental health problems.

Conclusions

The mental health management showed that the mental health of medical students was affected mostly by their parents, especially single moms or single dads' families, including the economic conditions of the family. Most students did not notice that they have mental problems while studying. Medical students from rural areas had the chance to have weak mental health than ones from the cities. Mental health level of the medical students was mostly at the first stage of anxiety disorders and mood disorders. There was about 7-10% of first-year medical students did not enable to stand their new lives at medical universities, so some resigned, and some would be dismissed one year later. Mostly the tests and examinations made all medical students getting panic, but it was not severe. Mental health and psychological problems were based on many conditions that sometimes were quite difficult to diagnose without the corporations of the students and some information from their parents and friends. All problems mostly were mixed up and hard to identify which are the most concerned with mental health. There were many factors involved with medical students' mental health problems, family, school, society, and personality. But they did not realize the change. Both students and the personnel in the medical faculty had a chance to have a mental illness, because of the surroundings.

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