

Investigation and enlightenment on the clinical medicine students' career expectations to general practitioners

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Abstract: *This paper aims to study the influencing factors of students majoring in clinical medicine (including directional training) in Chengdu University of Traditional Chinese Medicine on the occupational expectations of general practitioners. A total of 379 students majoring in clinical medicine and clinical medicine orientation in the College of Medicine and Life Sciences of Chengdu University of Traditional Chinese Medicine were investigated with the Occupational Expectation Scale. The results show that the average scores of students with two different training modes in the occupational expectation scale are higher than 3 points. At the same time, the monthly income of general practitioners expected by clinical medical students was investigated. The results showed that there were significant differences in the salary level of general practitioners expected by the two students. In addition, the doctor-patient relationship in primary medical institutions is also one of the important factors affecting the professional expectations of clinical medical students for general practitioners.*

Keywords: *general practitioner; clinical medicine; career expectations; orientation training*

1. Introduction

Since June 2, 2010, China promulgated the "Notice on the Issuance of Opinions on the Implementation of Free Training for Rural Order Oriented Free Medical Students", which states that colleges and universities in all provinces, municipalities directly under the Central Government and other regions are required to start training rural order-oriented free medical students, focusing on providing general practitioners with high quality and outstanding clinical ability for township hospitals and regions below. The state provides tuition exemptions and accommodation fee reductions for rural order-oriented medical students, as well as certain living allowances and other assistance for rural order-oriented free medical students. After completing their clinical studies, they need to return to the designated location for working. At the same time, in order to ensure the practice ability of rural order-oriented free medical students in primary health care institutions, they also need to complete the qualification examination for practicing physicians and standardized training for general practitioners. In the meantime, the National Development and Reform Commission requires provinces and municipalities to provide assistance to rural order-oriented free medical students according to circumstances to solve the worries of general practitioners.

General practitioners, as the gatekeepers of residents' health and China's medical insurance expenses, the core figures of community health service teams, the main participants and coordinators of various medical and health services, play an irreplaceable role in primary medical and health services. According to the "Opinions of the General Office of the State Council on Reforming and Improving the Incentive Mechanism for Training and Use of General Practitioners" [1] issued by the State Council in 2018, it is mentioned in the work objectives that by 2020, a general practitioner training system adapted to the characteristics of the profession will be basically established, the incentive mechanism adapted to the development of general medical personnel will be basically sound, and there will be 2-3 qualified general practitioners per 10,000 residents in all urban and rural areas. By 2030, the training system for general practitioners adapted to the characteristics of the industry will be more advanced, the incentive mechanism will be more perfect, there will be 5 qualified general practitioners for every 10,000 residents in urban and rural areas, and the general practitioner team will basically meet the needs of the construction of Health China. At present, universities and governments across the country are vigorously carrying out general medical education, building general medical teams, consolidating the primary

medical team, and cultivating general practitioners who meet the actual needs of the grassroots. General medical education and general medical personnel training have a bright future.

The research takes the clinical medicine major of the College of Medicine and Life Sciences, Chengdu University of Traditional Chinese Medicine as an example. The college has responded to the national call to carry out the teaching program of general medicine personnel training with traditional Chinese medicine characteristics since 2015, and has so far cultivated a large number of excellent general practitioners in the southwest.

2. Research Methods

2.1. Research purposes

To study the influencing factors of clinical medicine students' occupational expectations for general practitioners

2.2. Research objects

full-time undergraduates from the College of Medicine and Life Sciences, Chengdu University of Traditional Chinese Medicine, covering clinical medical students and clinical medical orientation students. Inclusion criteria: ① full-time undergraduates majoring in clinical medicine; ② gender is not limited; ③ voluntary participation in this study and informed consent to the content of this study.

2.3. Sampling scheme

The research adopted stratified cluster sampling method, in which one clinical medicine class and one clinical medicine orientation class are selected from the first to fifth grades of all clinical medicine students (including orientation training) in the School of Medicine and Life Sciences, and all students in the selected classes were taken as the research objects for questionnaire survey. When using the cluster sampling method, the sample size has to be expanded by 1.5 times based on the random sampling formula.

$$n = \frac{t_{\alpha}^2 \cdot P \cdot Q}{d^2} \cdot 1.5$$
, where P is the estimated awareness rate, Q=1-P, $t_{\alpha} \approx 2$ (when the α is 0.05), and d is the allowable error (0.1P).

Based on the pre-study data obtained in advance, the pre-study of 40 clinical medicine and clinical medicine oriented students in the class of 2019 obtained the willingness rate of clinical medicine students (including oriented training) to practice general practice as P=0.65, and the calculation shows that the total sample size n of clinical medicine majors in Chengdu University of Traditional Chinese Medicine is estimated to be 323. A total of 379 people were actually investigated in this study, which met the sample demand of the stratified cluster sampling method adopted in this study.

2.4. Research instrument

This social research adopted the "Occupational Expectation Scale" [2] compiled by Professor Liangliang Wu and Baoxian Li. This scale is scored by assessing the importance of the factors influencing a certain occupation to be engaged in the future. The scale is scored according to five levels: not very important, general, somewhat important, important and very important, with a score of 1-5. Respondents are asked to judge the relative importance of each variable in choosing a career based on their actual thinking [3]. The scale consists of 21 items, which are divided into three dimensions: prestige status and stability factor (F1), intrinsic value factor (F2), and external value factor (F3), of which F1 covers 8 items, F2 covers 8 items, and F3 covers 5 items. At the same time, the research group has set up buffer variables and demographic basic information survey in the questionnaire to ensure the integrity and credibility of the survey tools. The Cronbach's alpha coefficient of the questionnaire is 0.924, which has good reliability and validity.

2.5. Research procedure

The online questionnaire was anonymously filled out in this social survey. After the questionnaire was collected and collated, the research group checked one by one to eliminate the blank questionnaire

and the invalid questionnaire. The electronic questionnaire results were recorded by two people and checked by a person to ensure the accuracy and reliability of the questionnaire data input. The data were uniformly entered into Excel and SPSS 26.0 for data statistics and analysis.

3. Results and analysis

The questionnaire was divided into three parts, with a total of 37 questions. V1-V21 are the occupational expectation scale, and Q1-Q16 are the buffer variables and basic demographic information set by the research team.

3.1. Career Expectation Scale scores

3.1.1. Baseline data of clinical medicine students (including orientation training)

The subjects of this social survey were full-time undergraduates from School of Medicine and Life Sciences, Chengdu University of Traditional Chinese Medicine, covering a total of 379 clinical medicine majors and clinical medicine orientation students, of which 373 valid questionnaires were obtained. Among the respondents, the percentage of freshmen was 18.50%, with 69 students; the percentage of sophomores was 24.13%, with 90 students; the percentage of juniors was 20.64%, with 77 students; the percentage of seniors was 18.23%, with 68 students; and the percentage of juniors was 18.50%, with 69 students. There are 151 male students, accounting for 40.48%, and 222 female students, accounting for 59.52%. A total of 192 students, or 51.47%, were clinical medicine students; 181 students, or 48.53%, were clinical medicine oriented students. There are 69 students with urban household registration, accounting for 25.74%; and 277 students with rural household registration, accounting for 74.26%.

3.1.2. Overall career expectations of clinical medicine students (including orientation training) towards general practitioners

The overall scores of clinical medicine students' career expectations for general practitioners are shown in Table 1. The results showed that clinical medicine students (including orientation training) scored higher than 3 points in each item of the career expectation scale, and the selection of the survey subjects was generally between the general and the important. The average score of the intrinsic value factor item was the highest in the three dimensions, indicating that the internal factors dominate the choice of general practitioner as a practice direction for clinical medicine students (including directional training); the average score of the prestige status and stability factor items was the lowest, indicating that this dimension has the least impact on their decision to choose general practice as the practice direction.

Table 1: Scores of Career Expectation Scale for clinical medicine students (including orientation training)

Dimension	F1*	F2**	F3***
Average	29.97	32.88	20.14
Standard deviation	6.54	5.37	3.54
Item average	3.75	4.11	4.03

*Prestige status and stability

** Intrinsic value

*** Extrinsic value

3.1.3. Scores of Career Expectation Scale for General Practitioners among Clinical Medical Students of Different Grades

Table 2: Scores of the Career Expectations Scale for clinical medicine students in different grades

Dimension	F1*			F2**			F3***			Total average
	Average	Standard deviation	Item average	Average	Standard deviation	Item average	Average	Standard deviation	Item average	
Fifth grades	30.72	6.54	3.75	33.96	5.37	4.11	21.00	2.51	4.20	4.08
Fourth grades	30.11	8.04	3.76	31.07	7.62	3.88	19.57	5.09	3.91	3.85
Third grades	31.10	6.36	3.89	33.69	4.96	4.21	33.69	4.96	4.21	4.69
Second grades	29.27	6.38	3.65	33.12	4.45	4.14	19.92	3.23	3.86	3.92
First grades	28.71	5.87	3.59	32.35	4.57	4.04	19.26	3.14	3.85	3.82

*Prestige status and stability

** Intrinsic value

*** Extrinsic value

The average scores of each item and the total scores of the dimensions of the General Practitioner Career Expectations Scale for students of different grades from freshman to fifth year are shown in Table 2. The total average score of the career expectation scale for clinical medicine students (including directional training) was 3.95, and the total average score of clinical medicine students was 3.91, while the total average score of rural order-oriented free medical students was 3.99; The total average scores of 2017-2021 clinical medical students' occupational expectation scale were 4.08, 3.85, 4.69, 3.92 and 3.82, respectively.

3.1.4. The scores of clinical medicine students and rural-oriented tuition-waived medical students on the general practitioner career expectation scale

Through the statistics and analysis of the occupational expectation scale scores of clinical medicine majors and clinical medicine oriented majors, the occupational expectation scale scores of clinical medicine majors for general practitioners under two different training modes are shown in Table 3.

Table 3: Scores of Students' Career Expectation Scale in Two Different Cultivation Modes

dimension	F1 prestige status			F2 intrinsic value			F3 external value			Overall average
	Average	standard deviation	Item average	Average	standard deviation	Item average	Average	standard deviation	Item average	
clinical medicine students	29.62	6.91	3.70	32.61	5.33	4.08	19.95	3.76	2.49	3.91
rural-oriented tuition-waived medical students	30.34	6.13	3.79	33.15	5.41	4.14	20.35	3.28	2.54	3.99

3.2. Buffered Variable Data Analysis

3.2.1. The expected monthly income of general practitioners for students majoring in clinical medicine (including targeted training) under two different training modes (salary level within three years)

In the second part of the questionnaire, the members of the research team designed the buffer variable part according to the preliminary investigation results, and obtained the expected monthly income (salary level within three years) of general practitioners for clinical medicine students under different training modes, as shown in Table 4. At the same time, the results of two independent sample T tests on the expected monthly income of general practitioners (salary level within three years) under two different training modes are shown in Table 5. According to the homogeneity of variance test $F = 17.617$, $P < 0.10$, the difference was statistically significant, it can be considered that the variance is not uniform; according to $t = -4.725$, bilateral $P < 0.01$, indicating that the difference between the two groups was statistically significant. The expected monthly income of general practitioners of clinical medicine majors is significantly higher than that of general practitioners expected by clinical medicine oriented students. The reason for this result may be that the education programs accepted by the two are different. Due to the long-term acceptance of the national tuition relief policy and other cost relief systems, the rural order-oriented free medical students have a high degree of acceptance for the general practitioners who have become the primary health care institutions after graduation. In contrast, clinical medicine students have higher expectations and more choices for their own employment environment and salary package. Therefore, clinical medicine students and clinical medicine oriented students have obvious differences in the expected monthly income of general practitioners. According to Suman's empirical survey^[4], the income of general practitioners in primary health care institutions in the survey area can only be basically equal to the average salary of the society, and there is a significant difference between the data obtained in this survey. Li Wenmin compared the construction of general practitioners in China and foreign countries and found that the monthly income of general practitioners in eastern China in recent years was about CNY 5000; the average salary level of general practitioners in medical institutions at all levels in China in 2016 is shown in Table 6. General practitioners are less satisfied with remuneration packages and welfare guarantees. Western developed countries have improved the remuneration of general practitioners in their countries through high taxation of financial investment, medical insurance system and charity system. According to NHS Digital's 2018-2019 annual report, the average annual income of general practitioners in the UK is about \$130,400. The salary report released by the American medical website Medscape shows that the average salary of general practitioners in the United States in 2020 is 234,000 US dollars, which is about 3 to 4 times the average salary of the society. A 2021 report by the

Australian SEEK website shows that general practitioners are the highest-paid occupation in Australia at \$183,100 a year. The income of general practitioners in Germany is 4.4 times the average salary of the society^[6]. Compared with the salary level of general practitioners in China, the salary package of general practitioners in Western countries is significantly better than that of general practitioners in China. To sum up, there is a significant difference between the salary level of general practitioners in primary medical and health institutions and the expected monthly income of clinical medicine students; and there is also a significant gap between the salary of general practitioners in China and developed countries.

In the buffer variable problem setting: “the main reason that affects your choice of general practitioners as your employment direction”, there are 177 people who choose “the salary of general practitioners in other medical specialties is lower”, accounting for 47.45%. There are 62 people who have more opportunities for promotion”, accounting for 16.62%. The data is shown in Figure 1. Both of these two choices are directly or indirectly related to work income, indicating that the reason why the construction of general practitioners is still relatively weak in the context of the current medical environment is related to the salary level of general practitioners.

Table 4: Expected monthly income of general practitioners for students under two different training modes

profession	clinical medicine	Clinical orientation
Average	10221.35	7574.81
standard deviation	6489.76	4632.70

Table 5: Independent sample T-test of expected monthly income of general practitioners for students under two different training modes

	F	salience	t	degrees of freedom	Sig.(double tail)	mean difference	standard error difference
x Assume equal variances	17.617	.000	-4.777	371	<0.01	-2794.75311	585.07697
do not assume equal variances			-4.725	314.168	<0.01	-2794.75311	591.51928

Table 6: Average salary of general practitioners in Chinese hospitals at all levels in 2016^[5]

The level of hospital	Average annual salary income(RMB)	Average monthly income (RMB)
City hospital	131800	10983.33
District hospital	105000	8750.00
County-level hospital	80300	6691.67
community health service institution	87000	7250.00
township health center	62900	5241.67

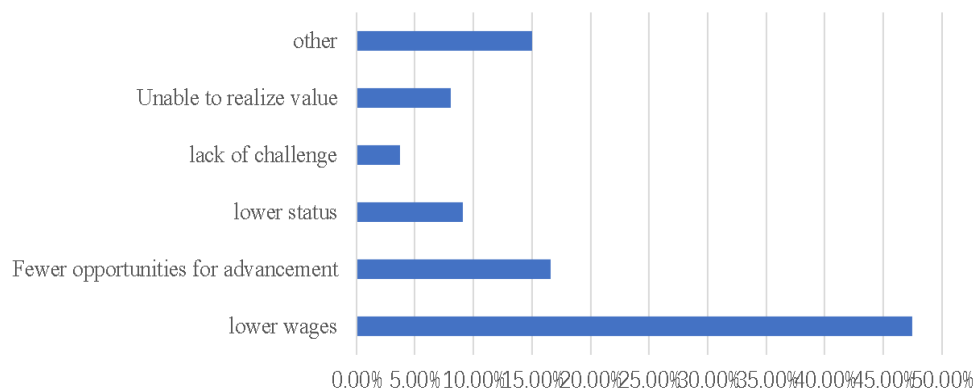


Figure 1: Statistics of the main reasons that affect your choice of GP as a career direction

3.2.2. A survey on the willingness of students majoring in clinical medicine (including directional training) to engage in general practitioners

A question was set in the buffer variable to investigate the willingness of students majoring in clinical medicine (including directional training) to become general practitioners; there were 177 people who chose "very willing" and "willing", accounting for 47.46%; Among them, there are 56 people in clinical medicine and 121 people in clinical medicine orientation majors. A total of 196 people chose "general" and below, accounting for 52.54%; a total of 136 people in clinical medicine, and a total of 60 people in clinical medicine orientation. The chi-square test was performed on the data obtained by the arrangement, and the differences shown in the composition ratio of the two majors were compared. The results are shown in Table 7.

Table 7: Survey on the willingness to practice of general practitioners among students majoring in clinical medicine (including targeted training)

profession	Willing, very willing.	General and below	total	χ^2	p□
clinical medicine students	56	136	192		
rural-oriented tuition-waived medical students	121	60	181	53.061	0.000**
total	177	196	373		

* p<0.05 ** p<0.01

3.2.3. Survey of clinical medical (including directed training) students ‘ perceptions of problems in general practitioner employment

In the buffer variable question setting, the research group imitated the occupational expectation scale question setting and set the following variables to explore the main problems faced by clinical medicine (including orientation training) majors for the employment of general practitioners. Including “family support”, “demand for general practitioner positions”, “social publicity of general practitioners”, “national investment (fund security, publicity and guidance, team building, facilities and equipment, etc.)”, “on-the-job working hours” “, “Physician-patient relationship in primary medical institutions”, etc. The results showed that more than 80% of the students majoring in clinical medicine (including directional training) chose the “very important” and “important” options, of which the variable “doctor-patient relationship in primary medical institutions” reached 91.16%, which was the primary reason.

According to the previous literature collection and pre-research results analysis, the questionnaire set buffer variables : ‘ You think the main problems facing the employment of general practitioners ‘, the research object according to their own thinking and actual selection ; (See Figure 2 for the statistical chart) The results show that 322 people (86.33 %) chose ‘ remuneration ‘ ; 264 persons (70.78 %) chose ‘ title promotion ‘ ; 244 persons (65.42 %) chose ‘ working environment ‘ ; 201 persons (53.89 %) chose ‘ prestige status ‘ ; 219 patients (58.71 %) chose ‘ doctor-patient relationship ‘ ; another 56 respondents believed that there were ‘ other ‘ factors affecting their choice of GPs as future employment directions.

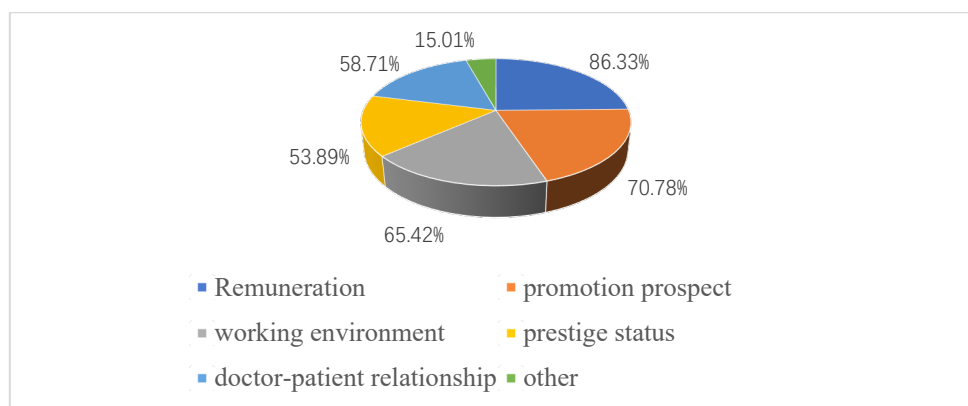


Figure 2: Statistical chart of the main problems faced by general practitioners in your opinion

4. Conclusion

4.1. The overall situation of students majoring in clinical medicine (including directional training) about the occupational expectations of general practitioners

Among the factors listed in the scale, clinical medical students and clinical medical orientation students mostly choose ‘ general ‘ and above, indicating that the items listed in the occupational expectation scale are highly consistent with the expectations of clinical medical students. The scores of the three dimensions are in turn internal value factor (4.11), external value factor (4.03), prestige status and stability factor (3.75). It shows that students majoring in clinical medicine (including directional training) pay more attention to the intrinsic value and external value of general practitioners.

The score of occupational expectation scale of rural order-oriented free medical students is generally higher than that of clinical medical students, indicating that after receiving different training methods, rural order-oriented free medical students have higher expectations for future GPs. It is not only expected that the practice environment of general practitioners can be significantly improved, but also rural order-oriented free medical students hope that they can give full play to their intrinsic value and ability in primary health care institutions.

4.2. Analysis on the salary level of general practitioners expected by clinical medical students

Salary level is one of the most important factors affecting clinical medical students ‘ choice of general practitioners as their employment direction. At the same time, through the analysis of the expected monthly income of general practitioners (salary level within 3 years) of clinical medicine and clinical medicine directional training students, it is found that the salary level of general practitioners expected by clinical medicine students is significantly higher than that of rural order oriented free medical students. On the one hand, this result shows that the education program accepted by rural order-oriented free medical students since enrollment has played a positive role in cultivating their dedication and willingness to serve the grassroots. On the other hand, it also shows that if wanting more non-targeted medical students to become a general practitioner in primary medical institutions, it can be solved by appropriately increasing the salary of general practitioners in China.

4.3. Analysis of factors affecting the choice of general practitioners for students majoring in clinical medicine (including directional training)

In addition to the factors in the occupational expectation scale, salary, promotion of professional title, working environment, prestige and status, and doctor-patient relationship are also the main factors affecting students majoring in clinical medicine (including directional training) to engage in general practitioners. Therefore, in improving the incentive mechanism of general medicine, we should comprehensively consider various factors and clinical actual situation to carry out corresponding work.

4.4. Clinical medical students should learn from the training mode of rural order oriented free medical students and encourage them to serve the grassroots level

A comprehensive analysis of the occupational expectation scale score and the analysis results of the salary level of general practitioners expected by students majoring in clinical medicine (including directional training) shows that the willingness of rural order-oriented free medical students to serve and root in the grassroots is significantly higher than that of students majoring in clinical medicine. Therefore, colleges and universities in the country have actively carried out innovative, in line with the actual higher general medical education at the grassroots level, but the total number of general practitioners in the country is still less than 13 % of the total number of clinical practitioners [7], it is necessary to learn from the training mode of rural order oriented free medical students, the training mode is reasonable to integrate into the education mode of clinical medical students ; To strengthen the professional ideal and belief education of clinical medical students, and encourage more non-rural order oriented free medical students to enter the grassroots, serve the grassroots and take root in the grassroots.

5. Countermeasures and suggestions

In 2015, the Chinese government put forward the strategy of ‘ Healthy China ‘. The realization of the goal needs to be based on the two focus points of ‘ whole population ‘ and ‘ whole life cycle ‘, relying

on a new health management model to provide ‘ fair access ‘ and ‘ systematic continuity ‘ health services. [8] As the main manager of the whole life cycle management of community population and the main participant of medical and health services, general practitioners play an irreplaceable role in grassroots medical and health institutions. Therefore, strengthening general medical education and expanding the talent team of general practitioners are the foothold and starting point of the Healthy China strategy.

5.1. Cultivating the dedication of students majoring in clinical medicine (including directional training) and strengthening the education of professional ideals and beliefs

Under a series of policies promulgated by the state, more and more clinical medical students choose to enter grassroots medical institutions after graduation to become a general practitioner, but the position of general practitioner is still facing a huge gap. Therefore, when training students majoring in clinical medicine, universities should strengthen the education of professional ideals and beliefs, cultivate students’ dedication, and encourage more high-quality talents to enter the grassroots, serve the grassroots and take root in the grassroots.

5.2. Improving the level of general medical education and enhancing social recognition of general practitioners

According to social identity theory, the more positive feedback GPs get from community residents, the more professional identity GPs get. Grassroots medical and health institutions should pay attention to their comprehensive strength and the overall social reputation. Meanwhile, they should improve the relevant supporting mechanism, so that general practitioners can enjoy more pride and self-identity [9]. At the same time, they should strengthen the social propaganda of general practitioners, improve the prestige and overall reputation of general practitioners in the population. In the form of actively carrying out higher general medical education in colleges and universities, colleges and universities should also uphold thinking and innovation, carry out general medical education with characteristics and in line with the actual situation at the grassroots level, and continuously improve their own general medical education level.

5.3. Responding to the incentive mechanism of general talents and strengthening the attraction of talents in primary medical institutions

The government should strengthen the investment in the construction of general practitioners’ talent team, improve the remuneration of general practitioners from the reality, and solve the worries of general practitioners according to the reality, so as to help them adapt to the actual situation of primary health care as soon as possible. Let the general practitioners firmly root in the grass-roots level, serve the grass-roots level, and constantly improving the construction of grass-roots medical institutions and the construction of general practitioners’ practice environment, truly let the general practitioners integrate into the healthy development of the population, and constantly attract more high-quality general practitioners to serve the grass-roots level.

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