

# Investigation and Research on the Current Situation of Medical Students' Cognition of Precision Medicine in Chengdu University of Traditional Chinese Medicine

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## Abstract

The essence of “precision medicine” is a new medical concept belonging to Western medicine, but many researchers have found that there are certain similarities between traditional medicine and precision medicine in China. In the context of the development of precision medicine, it is in the interests of the Chinese people to promote the process of refining Chinese medicine (Quan Xiao Cup, He Lisha & Zhao Linhua, 2016). Investigating and studying the awareness, attitude, and appeal of clinical students of higher TCM colleges and universities to precision medicine has practical value. In this study, the data were collected by questionnaire survey method, and some students of Chengdu University of Traditional Chinese Medicine were used as the survey subjects, and descriptive statistical analysis and chi-square testing were used to analyze the data. The data analysis results show that the awareness rate of “precision medicine” is low among the groups interviewed in higher Chinese medicine colleges, and only a small part of this group is learned through classroom learning, but most of them express interest in the knowledge of “precision medicine” and hope that the school can introduce the knowledge of “precision medicine”. According to the survey results, this paper provides a reference for this group, higher Chinese medicine colleges and universities, and the government to deal with the development of “precision medicine”.

**Keywords:** precision medicine, medical students, cognitive status quo

## 1. Introduction

Precision medicine is a discipline based on the genetic information of individual patients, integrating various disease diagnosis and treatment techniques and influencing factors, and accurately classifying and diagnosing diseases to achieve personalized and precise intervention (Wang Hai, 2018). It was first proposed by the United States (Janssen, Zhao Xuesen, Jiang Dong, Chen Chen & Zhang Fujie, 2015). Since then, China has also been committed to the exploration of precision medicine, proposing the concept of “precision medicine” with Chinese characteristics based on national conditions and the current situation of medical development, and vigorously supporting its development (Wang Hai, 2018). In the process of medical development in China, Chinese medicine also shoulders an indispensable and important role. Under the background of modern development research based on traditional Chinese medicine, researchers have found that there are certain commonalities between traditional Chinese medicine and precision medicine. At present, socio-political-economic development, medical progress, and medical model transformation have made higher medical education face challenges and put forward higher requirements for medical talents (CHING T, HIMMELSTEIN D S & BEAULIEU-JONES B K, et al., 2018). The current medical knowledge structure of undergraduate and graduate students in clinical medicine is still in the traditional medical model stage (Tang Junming, Zhou Minghua & Liu Qin, et al., 2015),

and the current situation of teaching is that “theory is divorced from practice, and the foundation is divorced from clinical” (Li Zegui, Xu Dixiong & Chen Junguo, 2010). At present, China’s development of precision medicine-related disciplines is far from meeting the needs of the development of precision medicine, and the knowledge reserve of medical talents cultivated cannot adapt to the development of precision medicine.

## **2. Literature Review**

Chinese scholars’ research on precision medicine began in 2016, and the theme search was conducted on CNKI with the keywords of “precision medicine” or “precision medicine”, so far there are 2,513 articles, most of which are on the development direction of precision medicine in China. He analyzes the connection and clinical application of traditional Chinese medicine and provides suggestions for the development of precision medicine in China. Of course, it does not cut down the investigation of the awareness of precision medicine by medical students and even college students, but China’s higher Chinese medicine colleges and universities, as a university with traditional Chinese medicine as the main teaching task, have not yet investigated and analyzed the awareness of “precision medicine”, so through the field research and theoretical analysis of Chengdu University of Traditional Chinese Medicine, the awareness of precision medicine in higher Chinese medicine colleges and universities has been discussed.

## **3. Purpose and Significance of the Survey**

The main objectives of this study are to understand the awareness and attitude of clinical majors in higher TCM colleges and universities towards precision medicine; to understand the attitude of higher TCM colleges and universities toward “the similarity between TCM and precision medicine”; to explore whether there are differences in the awareness of “precision medicine” in this group due to the different professional natures, and to explore the impact of classroom teaching in higher TCM colleges on the group’s understanding of the frontier development trend of “precision medicine” and other medical frontiers.

## **4. Survey Design and Implementation**

### *4.1 Survey Respondents*

The survey was aimed at five-year medical students of Chengdu University of Traditional Chinese Medicine, and the samples covered college students majoring in acupuncture and massage, integrative Medicine, Traditional Chinese medicine, and clinical medicine.

### *4.2 Questionnaire Design*

According to the purpose of the survey, the questionnaire mainly includes the following aspects:

- (1) Basic information section of the respondents.
- (2) Respondents’ awareness of “precision medicine”.
- (3) Respondents’ approach to “precision medicine” perceptions.
- (4) Respondents’ attitudes on whether there is a link between TCM and precision medicine.
- (5) Respondents’ attitudes towards “precision medicine”.
- (6) Respondents want schools to popularize “precision medicine” knowledge.

### *4.3 Implementation Methodology*

The survey was mainly based on the questionnaire method. In the questionnaire survey process, we adopted the method of hierarchical sampling, we first stratified different majors according to the proportion of the number of professionals, and then stratified the different grades according to the proportion of the number of middle-level students in the major, and then sent and received real-time, on-site questionnaires, a total of 400 questionnaires were distributed, 394 questionnaires were recovered, and the recovery rate was 98.5%. SpSS 22 is ultimately used for the collected questionnaire data 0 Software for statistical analysis.

## **5. Statistics and Survey Results**

### *5.1 Investigate Sample Distribution*

A total of 394 questionnaires were collected in this survey, and after screening out the sample size that was not filled in as required, and excluding abnormal values, 382 valid questionnaires were finally obtained, and the effective rate of questionnaires was 87.75%. Among them, 82 people are majoring in acupuncture and massage, accounting for 21.20% of the total number, 56 people majoring in integrated traditional Chinese and Western medicine, accounting for 14.66% of the total number 132 people are majoring in traditional Chinese medicine, accounting for 39.79% of the total number, and 112 people majoring in clinical medicine, accounting for 29.32% of the total number. The majors and grades were sampled according to the standard of hierarchical sampling, which conformed to the proportional distribution of students in the above four majors and corresponding

professional grades of Chengdu University of Traditional Chinese Medicine, and the proportion of questionnaire distribution was reasonable (see Table 1).

Table 1. Proportion distribution of students in majors and corresponding professional grades

X\Y	Sophomore year	Junior year	Senior year	Big five	Total
Acupuncture and tuina	14(17.07%)	15(18.29%)	32(39.02%)	21(25.60%)	82
Combined Medicine	13(23.21%)	18(32.14%)	15(26.79%)	10(25.00%)	56
traditional Chinese medicine	34(25.76%)	45(34.09%)	32(24.24%)	21(18.49%)	132
Clinical	44(39.29%)	23(20.54%)	23(20.53%)	22(23.66%)	112
total	105(27.49%)	101(26.43%)	102(26.70%)	74(1%)	382

## 5.2 Data Analysis of Survey Results

### 5.2.1 Investigate Sample Distribution

(1) The awareness of “precision medicine” in clinical specialties is small and generally low

In terms of the cognition of precision medicine, from the overall data analysis, 55.32% of the respondents have never heard of “precision medicine” and have no understanding at all, 42.33% of respondents have heard of “precision medicine” and know a little about it, only 0.35% of the respondents are relatively familiar with “precision medicine”; from the perspective of professional differences, 62.34% of TCM students, 65.33% of clinical students, 52.66% of students majoring in integrative medicine and 4.34% of students majoring in acupuncture and massage have never heard of precision medicine and have no understanding of it. To test the differences in the professional’s understanding of precision medicine, the chi-square test was used, and the sig value  $>0.05$ , therefore, it is believed that there is no statistical difference in the cognition of precision medicine in the above different majors; it can be seen that the clinical students of Chengdu University of Traditional Chinese Medicine generally have low awareness of the new medical model of precision medicine, and from the perspective of data analysis, the proportion of acupuncture and massage students’ awareness of precision medicine is relatively high, but the difference is not very large, and the overall situation is not ideal. This also shows that the popularity of “precision medicine” knowledge at Chengdu University of Traditional Chinese Medicine is not high.

(2) A small number of students surveyed learned about “precision medicine” through classroom channels

For the analysis of the cognitive pathways of respondents who have heard of and understand “precision medicine”, 79.34% of the respondents said that they learned about “precision medicine” through the Internet, and only 34.23% of the respondents learned “precision medicine” through the classroom, of which the survey results showed that most of the students learned “precision medicine” through biochemistry and molecular biology, cell biology, medical genetics, and diagnostics are learned in the study of these three courses. Through cross-analysis, it can be seen that 24.34% of acupuncture and tuina students learned about “precision medicine” through classroom learning, followed by 18.23% in clinical medicine and 8 in integrated traditional Chinese and Western medicine 45%, traditional Chinese medicine major 8.5%, although from the results of the chi-square test, there is no difference in the above majors, it can still be seen that the introduction of the new medical model of precision medicine in the classroom teaching of Chengdu University of Traditional Chinese Medicine is not ideal, but purely from data analysis, the classroom teaching of acupuncture and massage majors may be relatively high, which is also consistent with the data that acupuncture and massage students have a relatively high awareness of “precision medicine”.

### 5.2.2 The Overall Attitude of Clinical Students in TCM Schools Towards “TCM and Precision Medicine”

From the analysis of research data, there are 58.17% of respondents believe there is a link between precision medicine and TCM, while 64.32% of the respondents believe that the concept of Traditional Chinese medicine (such as “dialectical treatment”) can be used to cope with the development of “precision medicine”. 59.33% of respondents believe that Chinese medicine needs to be “precise” with modern student chemistry indicators, which are the three data Roughly equivalent, half of the students of Chengdu University of Traditional Chinese Medicine who have seen the above four majors believe that there is a connection between traditional Chinese medicine and the new medical model of “precision medicine”, which is similar to the current domestic researchers who believe that traditional Chinese medicine and “precision medicine” to a certain extent (BURT J R, TOROSDAGLI N, KHOSRAVAN N, et al, 2018). is a coincidence. Under the background of the new era, precision medicine has become the future development direction of the medical field, and Chinese medicine also

needs to use the achievements and technologies already achieved by modern medicine under the premise of exerting its advantages to make up for the shortcomings of Chinese medicine in the exploration of group treatment rules and provide assistance for the precision development of Chinese medicine (Quan Xiao Cup, He Lisha, Zhao Linhua., 2016). Therefore, as a higher TCM institution that cultivates TCM talents, it is necessary to follow up on the latest medical development direction in terms of a student training to cultivate changes that adapt to the rapid changes in current medicine.

### 5.2.3 Respondents' Expectations for Chengdu University of Traditional Chinese Medicine Based on "Precision Medicine" Teaching

Hoping to achieve the purpose of promoting the awareness of "precision medicine" in higher Chinese medicine institutions, to promote the precise development of Chinese medicine, 68.32% of the respondents support the combination of medical-related course teachers in Chinese medicine colleges and universities with "precision medicine". The requirements for teaching to make some improvements, at the same time, there are 51.49% of the respondents hope that teachers can introduce the latest developments in "precision medicine" in combination with relevant courses, 45.79% of respondents would like schools to conduct lectures related to "precision medicine", 44.34% of respondents would like schools to offer public elective courses related to "precision medicine".

## 6. Conclusions and Recommendations of the Survey

### 6.1 Conclusion

(1) Current Clinical students at Chengdu University of Traditional Chinese Medicine have a low awareness of precision medicine. The survey results show that the surveyed majors cover traditional Chinese medicine majors and Western medicine majors, but both have low awareness of "precision medicine", although there are differences in professional nature, there is no difference in awareness between different majors, which shows that the popularity of Chengdu University of Traditional Chinese Medicine on "precision medicine" knowledge is very low, and the dynamics of medical development are not understood.

(2) This group has a high degree of acceptance of "precision medicine" and is interested in the knowledge of "precision medicine". Judging from the survey, most of the respondents have learned about precision medicine through online media, which shows that the learning enthusiasm of students at Chengdu University of Traditional Chinese Medicine is still relatively high, and everyone pays more attention to the development trend of medicine, hoping to broaden their knowledge in medicine, so they can generally accept "precision medicine" and hope to understand the frontiers of medicine.

### 6.2 Suggestion

Based on the data analysis results of this survey and combined with the above conclusions, this paper puts forward the following targeted suggestions for college students, schools, and governments.

#### 6.2.1 Student Side

As a science of continuous progress and change, medicine requires medical staff to learn for life, and it is even more necessary to maintain interest in learning it at all times. The proposal and development of "precision medicine" undoubtedly put forward newer and higher requirements for medical students, medical students should not be limited to the knowledge learning of textbook theory, but should always pay attention to the latest trends in medical development, combine theory with clinical, make coping thinking about medical development in advance, and cultivate their medical research thinking, to have greater competitiveness and calmly cope in the face of medical changes.

#### 6.2.2 School Aspect

As a higher education institution that cultivates medical talents, it should not only cultivate students who can master medical theoretical knowledge but also cultivate a kind of clinical ability of students, and the ability to adapt to the development of medicine, so the school should encourage students to pay more attention to the development of medicine and actively and autonomously learn the most cutting-edge medical knowledge; at the same time, the school can also encourage teachers to combine clinical and new developments in clinical and medical development in teaching, which also enriches the classroom and broadens the knowledge of students. It further improves students' thinking ability in medical research (Liu Y, Wang M, Chen Q, et al., 2019).

#### 6.2.3 Government Side

(1) Through learning the advanced development model of precision medicine in Europe and the United States and other countries, encourage hospitals with rich experience and are carrying out precision medicine research and pilots to carry out relevant knowledge dissemination in medical colleges and universities, stimulate students' interest, give full play to the power of college-type hospitals, promote the development of precision medicine,

cultivate new medical talents, and inject fresh impetus into the development of the entire medical industry.

(2) Organize medical textbook writing experts to compile the relatively mature treatment plans related to “precision medicine” that are currently being carried out in clinical practice into the textbooks, to attract the attention of teaching teachers and students.

(3) Vigorously support the development of precision medicine from the policy and economic point of view, to obtain qualitative breakthroughs and improve the current situation of the high cost of “precision medicine” treatment and immature technology, which is helpful to promote national awareness of precision medicine.

## References

- Quan Xiao Cup, He Lisha, Zhao Linhua. (2016). Reflections on the era of precision in traditional Chinese medicine. *Journal of Traditional Chinese Medicine*, 57(20), 1715-1718.
- Wang Hai. (2018). Understanding and analysis of the new concept of “precision medicine”. *Chinese Scientific and Technological Terminology*, 20(2), 62- 65.
- Janssen. (2015). The “past and present” of precision medicine.
- Zhao Xuesen, Jiang Dong, Chen Chen, Zhang Fujie. (2015). Discussion on the training of medical graduate students in the cross-field under the background of precision medicine. *Continuing Medical Education*, 29(11), 52-54.
- CHING T, HIMMELSTEIN D S, BEAULIEU-JONES B K, et al. (2018). Opportunities and obstacles for deep learning in biology and medicine. *J R Soc Interface*, 15(141), 1-47.
- Tang Junming, Zhou Minghua, Liu Qin, et al. (2015), Reflections and exploration on the construction of postgraduate training system for clinical medical degrees under the integrated medicine model. *Northwest Medical Education*, 23(6), 982-984.
- Li Zegui, Xu Dixiong, Chen Junguo. (2010). Practice and reflection on the reform of basic medical education in China. *China Higher Medical Education*, 2010(7), 11-12.
- WANG Ruilin. (2016). From precision medicine to the thinking mode of integrating clinical education of integrated traditional Chinese and western medicine with the frontiers of modern medicine. *Modern Distance Education in Chinese Traditional Chinese Medicine*, 14(20), 1-3.
- BURT J R, TOROSDAGLI N, KHOSRAVAN N, et al. (2018). Deep learning beyond cats and dogs: recent advances in diagnosing breast cancer with deep neural networks. *Br J Radiol*, 91, 1-11.
- Liu Y, Wang M, Chen Q, et al. (2019). A novel heterozygous large deletion of MSH6 gene in a Chinese family with Lynch syndrome. *Gene*, 704, 103-112.

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