

# A Study on The Quality Evaluation of General Medical Education in China: An Empirical Analysis Based on 36 Medical Schools

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**Abstract:** Context: In the context of a healthy China, promoting general medical education and improving its quality have become key measures to strengthen primary health services and meet health needs in China, and it is of great significance to evaluate the current situation and quality of general medical education in China. The existing literature mostly studies and evaluates general medical education from a single perspective, lacking a comprehensive, systematic and integrated evaluation of general medical education. Objective: This paper analyzes the current situation, quality and key factors affecting the quality of general medical education in China, and provides a reference for medical schools to improve the quality of general medical education. Methods: The questionnaire was administered to 5271 students from 36 medical schools in August 2021 using a whole sample method. SPSS 26.0 software was used to analyze the differences in variables among the groups using independent samples t-test and multiple regression analysis of the key factors affecting the quality of general medical education. Results: The mean value of students' evaluation of each question item of the course is 3.69-3.81. The teachers' teaching methods are diversified, but they neglect the cultivation of students' personality, and there are problems such as inaccurate positioning of training objectives and weak practical links. In addition, students rated the mean value of each question item of the general medicine faculty as 3.76-3.79. 95.9% of students with internship experience rated the internship process as generally satisfactory or above, but considered the number of general medicine practice sites insufficient. Curriculum ( $\beta=0.567$ ,  $p=0.000$ ) was a key factor influencing the quality of general medicine education from the student perspective. There were differences in the evaluation of the quality of general medical education in China by students from different types of universities ( $p<0.05$ ). Conclusion: Students rate the current status and quality of general medicine education in China highly, and curriculum is a key factor affecting the quality of general medicine education from students' perspective. There are differences in the evaluation of the quality of general medical education in China by students from different types of universities. Quality improvement programs for general medical education should be designed in a hierarchical and categorical manner, and different measures should be taken for different types of medical schools to improve the quality of education.

**Keywords:** General medicine, Current situation, Quality of education, Influencing factors.

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## 1. Introduction

In October 2016, the State Council issued the "Health China 2030" planning outline, pointing out that promoting the construction of a healthy China is an important foundation for building a well-off society and basically realizing socialist modernization, and is a national strategy for comprehensively improving the health quality of the Chinese nation and achieving coordinated development of people's health and economic and social [1]. In the face of the demand for building a healthy China, promoting general medical education and improving its quality have become key initiatives to strengthen primary health services and meet health needs in China, and it is of great significance to evaluate the current status and quality of general medical education in China.

Foreign research on general medicine education has a long history. In 1969, the United States took the lead in establishing the Society of General Practice, marking the formal birth of general medicine. Foreign scholars' studies on the evaluation of general medical education have mostly used cohort control studies and cross-sectional control studies to evaluate the effectiveness of general medical education and training programs in training general practitioners. Using a cohort control study approach, Howard K Rabinowitz

evaluates Jefferson Medical College's Physician Shortage Area Program (PSAP), which established a comparison cohort of PSAP and non-PSAP students when the first class entered in 1974, noting that PSAP graduates were more likely to practice general medicine than their non-PSAP peers, and that the PSAP was a successful model for substantially increasing the supply and distribution of rural general practitioners [2]. Andrea L Wendling compares the specialty choice and time location of graduates of the Rural Physician Program (RPP) created by the Michigan State University College of Human Medicine (MSU-CHM) with all other MSU-CHM graduates, showing that RPP graduates are more likely to pursue a specialty in general practice and enter rural practice, and that the RPP program, with its extensive clinical training for students with a rural interest, can successfully promote students' choice to become rural general practitioners [3]. In a cross-sectional controlled study, John R Wheat evaluated the effectiveness of the Rural Medicine Scholars Program (RMSP) in training rural general practitioners in Alabama, noting that the RMSP was effective in training rural physicians [4]. The World Organization of General Practitioners (WONCA) has developed nine standards for general medical education, including mission and mission, training process, trainee assessment, trainees, staffing, training environment and educational resources, training

process evaluation, governance and management, and continuous renewal. The evaluation of general medical education abroad includes not only the stages of undergraduate medical education and residency training, but also the choice of training specialties, the passing rate of national medical licensing examinations, the choice of practice specialties and factors that have an important impact on the final effect of education, etc. A more complete evaluation index system has been formed.

Domestic research on general medical education started late, but after the 21st century, related research in China has been growing. Most of the literature examines the need for general medical education, future development, pathways to achieve it, comparative studies, and other dimensions [5], [6], [7]. Most of the existing studies on the evaluation of general medicine education focus on a single dimension. Some scholars have studied general medicine faculty [8]- [9], and put forward ideas and perspectives about the construction of general medicine faculty by describing the current situation of the structure, training, and admission standards of general medicine faculty at home and abroad [10]. Some scholars have also explored it based on the perspective of general medicine curriculum [11]-[12]. Yuan Li et al. pointed out, through the research of 30 colleges and universities, that there are problems in China's general medical education, such as the ambiguous positioning of the goal of "general medical education" in the curriculum objectives, the similarity of the curriculum training objectives in different colleges and universities and the lack of characteristics, and the lack of process and experiential objectives in the curriculum training objectives, which emphasize too much on the outcome and performance objectives [13]. Feiyue Wang analyzed the effectiveness of online teaching in general medicine courses from the perspective of teachers and its influencing factors [14]. Other researchers have studied the perspective of teaching practice in general medicine education [15]-[16], and Kong Yan et al. surveyed and analyzed primary practice sites through a self-administered questionnaire [17].

In summary, in recent years, the number of papers on quality evaluation of general medical education in China has gradually increased and the quality has been improving, but there are some shortcomings in the research on quality evaluation of general medical education. First, at present, the overall research on quality evaluation of general medical education in China is relatively weak, and the number of research papers on quality evaluation of general medical education is scarce. Most of the current literature in China discusses the necessity of developing general medical education, the current situation, the development model of general medical education, the comparison of domestic and foreign general medical education, and the realization path, but there is little research on the quality evaluation of general medical education, and the evaluation constructed from the three dimensions of current situation, results and process is even blank. Secondly, there is a lack of comprehensive, systematic and integrated evaluation of the quality of general medicine education in China's higher education institutions. Existing studies on the evaluation of quality of general medical education in higher education institutions have focused on only a single aspect. For example, it is limited to the evaluation of the quality of the curriculum of general medicine education in higher education institutions, and the evaluation of the quality of the faculty of general medicine education only, or the evaluation of the quality of practice

teaching in general medicine practice bases only. There is a lack of evaluation of the holistic nature of the curriculum, faculty, and practice of general medicine. Third, there is a lack of empirical studies based on large sample data analysis, and the sample size and representativeness of existing studies are insufficient. At present, most of the studies on evaluating the quality of general medical education in China are descriptive theoretical studies, lacking sufficient data support, among which empirical papers based on data are even scarcer. With the prevalence of general medical education, it is urgent to improve the quality of general medical education in higher education institutions through a scientific and reasonable evaluation system of general medical education that fits the Chinese scenario. Based on this, this study attempts to evaluate general medicine education in medical schools in China based on the practice of general medicine education in medical schools using questionnaire survey method and three dimensions of current situation, education quality and implementation process based on a large sample of survey data, aiming to provide reference for medical schools to develop general medicine teaching and improve the quality of education.

## 2. METHODS

### 2.1. Data sources

The questionnaire was distributed to all higher education institutions in China by means of an overall sampling method, and the questionnaire was targeted at students from freshmen to fifth-year students of general medical education. A total of 5,879 questionnaires were collected, and 5,271 valid questionnaires (89.66%) were obtained by excluding those with too short a response time and high repetition rate of questionnaire options. The valid questionnaires recovered involved 20 provinces such as Zhejiang, Henan and Anhui, and 36 colleges and universities such as Anhui Medical University, Chengdu Medical College and Guangxi Medical University. The survey is anonymous and all data are for academic research purposes only.

### 2.2. Research Methods

On the basis of literature research and expert opinions, a questionnaire was designed, which included students' basic information, such as gender, age, school, etc., and students' evaluation of the current situation, quality and education implementation process of general medical education in their schools.

Valid data were analyzed using SPSS 26.0 software, and the questionnaire had good internal consistency (Cronbach's  $\alpha > 0.9$ ). Exploratory analyses showed that each question item for quality of education and implementation process passed the KMO and Bartlett's test with KMO of 0.78 and 0.981, respectively, and the significance of Bartlett's sphere test were both 0.000, indicating that the data were suitable for factor analysis. The multiple regression passed the three main tests (DW=1.942, the range of values of tolerance between 0.511 and 0.868, and the normal distribution of residuals).

### 2.3. Data analysis

SPSS 26.0 statistical software was used to analyze the data. Descriptive statistics were used to analyze the current status of general medical education, and exploratory factor analysis was performed to extract quality and implementation process metric factors for general medical education. Independent

samples t-test was used to analyze the differences in variables among the groups, and multiple regression analysis was performed to analyze the key factors affecting the quality of general medical education. Differences were considered statistically significant at  $P < 0.05$ .

### 3. Results

#### 3.1. Basic information of survey subjects

A total of 5271 people were surveyed, 2207 men (41.9%) and 3064 women (58.1%). There were 1,459 (27.7) first-year students, 972 (18.4%) second-year students, 1,249 (23.7%) third-year students, 988 (18.7%) fourth-year students, and 603 (11.4%) fifth-year students. There were 2,663 students (50.5%) in medical schools of comprehensive universities and 2,608 students (49.5%) in independently established medical schools. There were 1058 students who were only children (20.1%) and 4213 students who were not only children (79.9%).

#### 3.2. Analysis of the current situation of general medicine education in Chinese higher education institutions

##### 3.2.1. Students have poor knowledge of general medicine and are not motivated to learn on their own

The survey results show that most students in Chinese higher education institutions do not have sufficient knowledge of general practice in general medicine. 54.8% of students in higher education did not know the current proportion of general practitioners in China; 31.6% also did not know the ideal proportion of general practitioners should make up the total number of doctors; 65.2% of students had a below average understanding of the difference between

general practice and specialist medicine; and 63.5% had a below average understanding of the role of general practice in the health service system. In terms of independent learning among general medical students, a large proportion of students in Chinese higher education institutions are not highly motivated to learn about general medicine on their own. 93.5% of students in higher education institutions read less than 6 pieces of literature related to the specialty of general medicine per week, and only 0.6% read more than 10 pieces.

##### 3.2.2. The general medicine curriculum is well designed and delivered in a variety of ways

The results show that the design of the general medicine curriculum in Chinese higher education institutions is more reasonable, with students rating the number of hours and the arrangement of the curriculum in higher education institutions with a mean score of 3.69-3.81 for each question item. (Table 1)

In terms of teaching methods, Chinese higher education institutions have diversified their teaching methods, and teachers of general medicine use a variety of teaching methods such as "theory lectures", "hospital attachment", "group interaction", "case study", "doctor interviews", "video teaching" and "online courses". In the question "What kind of teaching methods would you like to receive?" (94.5% of the options selected, below), "hospital attachment (89.1%)" and "theoretical lectures (81%)" were the most popular methods of delivery. The lectures were most popular with the students. However, the problems of "neglecting personality training (37.2%)", "inaccurate positioning of training objectives (33.7%)" and "weak practical aspects (33.1%)" still exist in the education of general medicine in Chinese higher education institutions.

**Table 1.** Descriptive statistics for course design evaluation

| Level 1 Indicators | Level 2 Indicators                                  | Minimum value | Maximum value | Average value | Standard deviation |
|--------------------|-----------------------------------------------------|---------------|---------------|---------------|--------------------|
| Course Design      | Number of hours of basic medicine courses           | 1             | 5             | 3.81          | 0.644              |
|                    | Number of hours of clinical specialty courses       | 1             | 5             | 3.8           | 0.68               |
|                    | Sequence of professional course offerings           | 1             | 5             | 3.76          | 0.659              |
|                    | Number of credit hours of public foundation courses | 1             | 5             | 3.74          | 0.661              |
|                    | Number of credit hours in general medicine courses  | 1             | 5             | 3.73          | 0.664              |
|                    | Arrangement order of public foundation courses      | 1             | 5             | 3.73          | 0.645              |
|                    | Humanities course offerings                         | 1             | 5             | 3.73          | 0.64               |
|                    | Number of credit hours scheduled for each course    | 1             | 5             | 3.71          | 0.658              |
|                    | Number of courses offered by semester               | 1             | 5             | 3.71          | 0.664              |
|                    | Number of hours of practical classes                | 1             | 5             | 3.7           | 0.692              |
|                    | Arrangement of elective courses                     | 1             | 5             | 3.69          | 0.658              |

##### 3.2.3. High level of general medicine faculty

The survey showed that the quality of general medicine teachers was high and that the attitude, content, teaching methods and general practice philosophy of general medicine teachers were rated highly. The mean value of students' evaluation of the general medicine teachers for each question

item was 3.76-3.79. The above data shows that the general medical education in China has been widely implemented to strengthen the training and construction of general medical teachers.

### 3.2.4. The internships is an important part of medical students' professional studies, students are satisfied with the process but there is a lack of practice sites for general medicine

Since internships are mostly concentrated in the latter part of college, the analysis was based on data from students in their fifth year of college. The findings show that internships are an important part of professional learning for medical students. 75.3% of the fifth-year students had internships in community health services or organizations related to general medicine arranged by their schools. Students' satisfaction with the internship process was high, with 95.9% of students with internship experience rating the internship process arranged by the school related to general medicine as generally satisfactory or above. Students' satisfaction with the internship process was higher because of the reasonable length of the internship (80%), the supporting facilities of the training base of the internship hospital and the training environment (71.9%). There are various forms of general medicine practice, among which internship practice (91.8%), case study discussion (70.1%) and visit (54.3%) practice forms are more popular among students.

According to the survey, the number of general medicine practice bases in China is lacking. Of the hospitals with separate general medicine departments, 67.5% have less than two training bases, indicating that most hospitals in China are still in a situation where there is a considerable lack of community training bases for general medicine.

### 3.3. Evaluation of quality outcomes of general medicine education in Chinese higher education institutions

Also known as summative evaluation, outcome evaluation is an assessment of the impact gained by the educated person, examining the cognitive changes in knowledge and skills, affect and behavior, and also the effectiveness of education in driving practice. [18] Taylor's behavioral goals model is one of the best known, and the concept of 'educational assessment' was first introduced and formally used by Taylor in his 'eight-year study', the Smith-Taylor Report. Taylor's behavioral goals model takes educational goals as its orientation, translates them into measurable behavioral goals for students, develops curricula, teaching materials or teaching programs based on these behavioral goals, carries out teaching activities, and then evaluates the effectiveness of teaching activities based on the behavioral goals, and judges the extent to which

the actual teaching activities have achieved the desired goals through the evaluation of the final results. [19] Under Taylor's influence, the evaluation of school education focuses on various areas of educational activity (e.g. curriculum, educational programs, student learning outcomes, etc.), the basic basis for evaluation is the educational objectives and the evaluation pays attention to comprehensiveness. [20] Outcome assessment emphasizes the use of objective and concrete data to quantitatively describe complex educational phenomena and students' learning behaviors, which is a rational exploration of the path of pursuing scientific assessment in education and its own value cannot be denied. [21] The core of educational evaluation is directed towards the cultivation of talents, which is a systematic project, and the results are indispensable as the basic orientation of educational evaluation. [22]

In summary of the literature, there is a need for outcome evaluation of the quality of general medical education. The outcome evaluation of general medical education in this paper is the evaluation of the extent to which the objectives are achieved, i.e. the final learning outcomes, achievements or accomplishments, using the predetermined educational objectives as a benchmark. The quality of general medicine education in universities was assessed through student satisfaction scores on the indicators of overall satisfaction with the quality of general medicine education, conformity of educational objectives to needs, and evaluation of theoretical knowledge and practical skills in general medicine.

#### 3.3.1. Descriptive statistics and exploratory analysis of the quality outcome dimensions of general medical education in higher education

The descriptive statistical analysis revealed that students rated the quality of general medical education in higher education as high, with a mean student satisfaction score of 3.72 on the quality outcome dimension of general medical education in higher education. (Table 2) Since the later analysis involves student internship practices, data from students who have participated in internships were selected and the sample size was 1511. Exploratory factor analysis was performed on the four items of quality of general medical education, and each item passed the KMO and Bartlett's test with a KMO of 0.78 and a significance of 0.000 for Bartlett's sphere test. Following the principle of eigenvalue of 1, a common factor was extracted and named Quality of Education (outcome dimension) with a total variance explained of 65.899%. (Table 3)

**Table 2.** Descriptive statistics of education quality

| Level 1 Indicators   | Level 2 Indicators                                                                                            | Minimum value | Maximum value | Average value | Standard deviation |
|----------------------|---------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|--------------------|
| Quality of Education | School-based general medicine education helps to enrich medical theoretical knowledge                         | 1             | 5             | 3.8           | 0.62               |
|                      | The extent to which the training objectives of the school's general medical education correspond to the needs | 1             | 5             | 3.74          | 0.638              |
|                      | School-based general medicine education helps learn medical practice skills                                   | 1             | 5             | 3.72          | 0.668              |
|                      | Overall satisfaction with the teaching of general medicine education in schools                               | 1             | 5             | 3.62          | 0.687              |

**Table 3.** Exploratory factor analysis of the quality of general medical education (outcome dimension)

| Component matrix a                                                                                            |             |
|---------------------------------------------------------------------------------------------------------------|-------------|
| Title item                                                                                                    | Ingredients |
|                                                                                                               | 1           |
| The extent to which the training objectives of the school's general medical education correspond to the needs | 0.889       |
| School-based general medicine education helps to enrich medical theoretical knowledge                         | 0.871       |
| School-based general medicine education helps learn medical practice skills                                   | 0.863       |
| Overall satisfaction with the teaching of general medicine education in schools                               | 0.585       |

Extraction method: principal component analysis.  
a One component was extracted.

### 3.3.2. Analysis of students' satisfaction with the quality of general medical education in schools

(1) Students' satisfaction with the quality of general medicine education differs significantly among different types of universities

The differences between the comparison groups were statistically significant, with students at comprehensive university medical schools being significantly more satisfied with the quality of education than students at independently established medical schools ( $p < 0.01$ ). The mean satisfaction rating score of students in medical schools of comprehensive universities was 3.7425, and the mean satisfaction rating score of students in independently established medical schools was 3.6452.

(2) Significant differences in students' satisfaction with the quality of general medical education in schools by different characteristics

The differences between the comparison groups were statistically significant, and girls were significantly more satisfied with the quality of education than boys ( $p < 0.05$ ). Students who were willing to become a general practitioner after graduation were significantly more satisfied with the quality of education than those who were not willing to become a general practitioner after graduation ( $p < 0.01$ ). Students who were only children were significantly more satisfied with the quality of education than those who were not only children ( $p < 0.05$ ).

### 3.4. Evaluation of the implementation process of general medicine education in Chinese higher education institutions

Process evaluation is an activity that adds value to the teaching and learning process by giving immediate and dynamic feedback, interpretation and adjustment of the information involved in the student learning process, with the aim of collecting information on the strengths and weaknesses of each part of the teaching and learning process in order to identify areas for revision and improvement. [23] Typical of this is Stufflebeam's "CIPP model", which in 1966 stated that "the most important intention of evaluation is not to prove, but to improve" [24] In 1985, Stufflebeam further suggested: "Evaluation is a process of delineating, obtaining and providing narrative and judgmental information. This information relates to the objectives, design, implementation and impact values and strengths and weaknesses of the research subject in order to guide how decisions are made, to meet the needs of approved teaching effectiveness and to increase understanding of the research subject". [25] Process evaluation is the optimization and supplementation of outcome evaluation, and is a whole process, all-round, multi-

perspective evaluation of the performance and effectiveness of the educational activities and other elements of the subject of evaluation. Process evaluation emphasizes the quality of the education and teaching process, the core of which is based on the requirements of talent training quality. Through the process evaluation of each teaching link, it complements and promotes each other with the result evaluation, and encourages schools to form a complete internal evaluation system in line with their own reality. Process evaluation is dynamic and has the characteristics of being highly targeted and effective, which can identify and regulate the shortcomings of all aspects of education and teaching in a timely manner and provide a guarantee for the steady improvement of talent training quality. [26]

Process evaluation in general medical education is focused on the process elements that influence outcome evaluation. Based on the above literature, this paper argues that the process evaluation of general medical education is to evaluate the elements of general medical education and to collect information on the strengths and weaknesses of each part and element of the general medical education process in order to identify areas that need to be modified and improved. Therefore, the evaluation of the general medicine education process in this paper starts from four evaluation indicators: curriculum, faculty, practice teaching and support system, and then analyses the shortcomings and strengths of the general medicine education process as well as the key elements affecting the quality of general medicine education in universities.

#### 3.4.1. Key factors influencing students' evaluation of the quality of general medical education in higher education

Students rate the process of general medicine education in higher education higher, and the curriculum is the most important factor influencing the quality of general medicine education (outcome dimension) in the students' perspective. The mean value of students' evaluation of the process of higher general medicine education for each question item was 3.09-3.81.

The process dimension items passed the KMO and Bartlett test with a KMO of 0.981 and a significance probability of 0.000 for the Bartlett sphere test, indicating that the items were highly correlated and suitable for factor analysis. The implementation process question item common factors were extracted according to the principle of eigenvalues greater than one, and four common factors were extracted from the 33 educational process variables in this study, with a cumulative total variance of 72.792%. The four common factors are named as curriculum, faculty, practical teaching, and support system. Regression analysis was conducted with these four common factors as independent variables and the education quality factor as dependent variable. Regression

analysis revealed that curriculum ( $\beta=0.567$ ,  $p=0.000$ ) was the key factor influencing the quality of general medicine education from the student perspective, followed by support

system, faculty and practice teaching, all of which also had significant regression coefficients. (Table 4)

**Table 4.** Regression analysis of process factors affecting the quality of education

| Quality of Education | Standardization factor<br>Beta<br>Sig. | curriculum | Support System | faculty | practical teaching |
|----------------------|----------------------------------------|------------|----------------|---------|--------------------|
|                      |                                        | 0.567      | 0.302          | 0.118   | 0.106              |
|                      |                                        | 0          | 0              | 0       | 0                  |

### 3.4.2. Comparison of differences in students' satisfaction with the process of education implementation in different types of universities

The difference between the comparison groups was

statistically significant ( $p<0.05$ ), and the comprehensive university medical schools received significantly higher satisfaction scores than the independently set up medical schools in curriculum, practical teaching, and support system. (Table 5)

**Table 5.** Comparison of differences in the evaluation of educational implementation process in different types of universities

|                    | School Type                              |                             | t      |
|--------------------|------------------------------------------|-----------------------------|--------|
|                    | Comprehensive university medical schools | Independent medical schools |        |
| curriculum         | 3.775±0.065                              | 3.71±0.08                   | 2.012* |
| faculty            | 3.8±0.02                                 | 3.76±0.02                   | 1.526  |
| practical teaching | 3.445±0.345                              | 3.395±0.315                 | 2.63** |
| support system     | 3.72±0.06                                | 3.63±0.08                   | 2.569* |

Note: \*\* significant correlation at 0.01 level; \* significant correlation at 0.05 level

## 4. Discussion

Firstly, we will improve the system of general medical education and actively carry out general medical education from four aspects: students' awareness, curriculum, faculty level and teaching practice. Raising students' awareness and motivation to learn about general medicine is a necessary prerequisite for training general practitioners. This can be done from both the teacher and the students. One is the teacher-driven approach to enhancing students' cognition and motivation to learn, where the teacher guides students to participate in the teaching through innovative and colorful teaching methods and the design of exciting teaching content, which in turn enhances students' cognition and motivates them to learn. Secondly, students are consciously and actively motivated to enhance their cognition and learning motivation. Teachers organize their teaching in a more case-based and problem-centered way in their teaching design, providing students with problems, and students are inspired to enhance their cognition and motivate their own learning in the process of problem solving. With students having the motivation to learn about general medicine, the problem of the low number of students reading literature related to general medicine is solved.

In terms of the construction of the general medicine curriculum, data analysis shows that there are problems of neglecting personality training, inaccurate positioning of training objectives and weak practical aspects. The most direct teaching management method for personalized education is the credit system, which establishes a student-centered teaching relationship. Under the credit system, students plan their own courses and build their own framework of knowledge according to their talent training program. In addition, a mentoring mechanism based on the undergraduate mentoring system has been established to help and guide students to identify their personal development direction and to design ways to achieve it one by one. Clarify

the positioning of general practitioners, actively explore and build a close integration between schools and society, train "gatekeepers" for community health services and protect and improve the health of urban and rural residents according to the needs of society. According to the previous analysis, in addition to the weakness of the practical link, the number of hours of internship and apprenticeship courses also scored low in the question item. In this regard, schools should pay attention to the construction of practical bases, strengthen the construction of campus laboratory teaching facilities, increase the number of hours of internship and apprenticeship courses, and hold various forms of competition activities.

The current level of general medicine teachers in Chinese higher education institutions is high, but there is a problem that the assessment method is too homogeneous. In response to this problem, different assessment methods can be adopted for the assessment of theoretical courses and practical courses. For courses that are more theoretical, a combination of multiple regular tests and final examinations can be adopted to shift the focus of students' learning to the regular classroom and introduce assessment methods such as accompanying tests and classroom discussions. For practical courses, a combination of the usual assessment and a designated project designed by a student team can be used.

In terms of teaching practice, in response to the aforementioned problem of the lack of an appropriate number of general practice bases in China. On the one hand, a new mechanism of base construction is explored that "takes student training as the core, drives cooperation among schools, hospitals, society and the government, and attracts social and government investment" [27]. On the basis of "mutual benefit and multiple gains", government and social financial support is used to vigorously build general practice bases, with government policies as the backing, to solve the problem of the lack of a number of general practice bases in China. On the other hand, attention is paid to the existing practice bases of general medicine. In terms of hardware, the infrastructure

of the practice teaching bases is improved, high-tech and high-quality teaching facilities and equipment are introduced, and outdated as well as old facilities and equipment are updated. In terms of software, the software systems necessary for student learning are updated in a timely manner and software of universal significance and widespread value is selected for introduction into use. In terms of practical teachers, training and exchanges are carried out for teachers, and the school provides regular or occasional practical skills training for base teachers and develops strict methods for the assessment and management of base teachers to improve the quality of teachers. Improve the standard of facilities and quality of faculty at existing practice sites and upgrade existing general medicine practice sites.

Secondly, a combination of multiple evaluation methods is used to promote high quality and sustainable development of general medical education through a variety of evaluation methods. General medical education is a systematic process and should be assessed using a diverse and multi-dimensional system. In the evaluation process, attention is paid to a combination of outcome and process evaluation. Using outcome evaluations to obtain students' assessments of the extent to which the training objectives of school-based general medical education correspond to the needs, the extent to which school-based general medical education contributes to the enrichment of theoretical medical knowledge, the extent to which school-based general medical education contributes to the acquisition of practical skills in general medicine, and the overall satisfaction with school-based general medical education. To test whether the objectives of general medical education are being effectively implemented, using the quality and outcomes of talent development as the fundamental criteria. Feedback from students is used to understand the shortcomings of general medical education in schools, so that the government, society, schools and teachers can understand the teaching situation and provide an objective basis for adjusting teaching behaviors. Using process evaluation to assess the curriculum, faculty, practice teaching, and support systems in the process of general medical education. Based on the results of the students' evaluations, the overall situation is grasped, the strengths and weaknesses of the general medical education process are identified, the key elements that affect the final quality of education in universities are searched for and the strengths of each element of the education process are brought into play. According to the regression analysis of the above data, the curriculum is the most critical indicator of the quality of education, and it is important to monitor the curriculum to prevent and precisely "treat" the problems that exist and effectively improve the quality of general medical education.

Thirdly, a tiered and categorized design of quality improvement programs for general medical education, with different measures for different types of tertiary institutions to improve the quality of their general medical education. The study shows that students' satisfaction with the quality of general medical education varies significantly between different types of universities. For example, students in medical schools of comprehensive universities are significantly more satisfied with the quality of general medical education than students in independent medical schools. The medical schools of comprehensive universities can take advantage of the better humanistic environment and quality disciplinary resources of comprehensive universities, and emphasize the multi-level training of literacy,

competence and learning, so that general medical students can develop higher overall literacy and comprehensive strengths on top of good professional skills [28]. Taking advantage of the large number of disciplines and a wide range of categories, we actively promote cross-pollination and integration of disciplines and strengthen the basic disciplines. The independent medical school has always taken the training of medical professionals as its objective, with the main focus on training applied talents for medical practice, as well as medical research and teaching capabilities [29]. Independent medical schools should make use of the system of running schools with a single type of talent training and clear objectives, pool the wisdom of the whole university and combine the efforts of the whole university to jointly achieve the goal of training medical specialists, establish a whole set of medical discipline system, strengthen the construction of the curriculum of general medicine and improve the quality of general medicine education.

## 5. Conclusion

After more than 20 years of development, Chinese institutions of higher education in general medicine have achieved some successes and have been highly rated in terms of general medicine curriculum, faculty, practice teaching, and support system. The mean value of students' satisfaction score for the outcome dimension of quality of general medical education in higher education was 3.72, and students rated the quality of general medical education (outcome dimension) in higher education higher. In addition, there were significant differences in the satisfaction scores for the quality of general medical education (outcome dimension) among students from different types of colleges and universities, and there were also significant differences in the satisfaction scores for the quality of general medical education (outcome dimension) in schools among students with different characteristics. Students in medical schools of comprehensive universities were significantly more satisfied with the quality of education than students in independently established medical schools ( $p < 0.01$ ). Female students are significantly more satisfied with the quality of education than male students ( $p < 0.05$ ). Satisfaction with the quality of education was significantly higher among students who were willing to become a general practitioner after graduation than among those who were not willing to become a general practitioner after graduation ( $p < 0.01$ ). Students who were only children were significantly more satisfied with the quality of education than those who were not only children ( $p < 0.05$ ).

Students' evaluation of the process of general medical education in higher education is high. The mean value of students' evaluation of each question of the process of general medical education in higher education is 3.09-3.81. Curriculum is the most important factor influencing the quality of general medical education (outcome dimension) in the student's perspective. In addition, there were significant differences in the satisfaction scores of students on the quality of general medical education (process dimension) among different types of universities. Students in medical schools of comprehensive universities rated the curriculum, practical teaching, and support system significantly higher than students in medical schools of independent settings ( $p < 0.05$ ).

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