

# Construction of Medical Students' Employment Information Service System in the Era of Big Data

Yuan Lei

Xinxiang Medical University, Xinxiang, Henan, China

## Abstract

*The employment of college graduates is related to the happiness of thousands of families and the harmony and stability of society. To promote the high quality employment of college graduates should be placed in a prominent position. Taking the current employment of college students as the research object, this paper explores the current situation of the construction of employment information service system for medical college students. Based on the comprehensive analysis of the reasons for the employment difficulties of medical college students, combined with the background of the current big data environment, this paper constructs the employment information service system of medical college students. Through the construction of Medical College Students' employment information service system, we can provide more powerful information support for college students' employment. The experimental study shows that the method proposed in this paper is an effective measure to solve the employment problem of college students.*

**Keywords:** *College Students' employment, medical specialty, employment information service system, data fusion.*

## I. Introduction

In this paper, through research, to understand the impact of the new medical reform policy on the employment of medical students, grasp the influencing factors of the employment status of medical colleges, specifically explore the problems existing in the employment service system of medical colleges, and then put forward suggestions to improve the employment service system of medical colleges [1-2].

The theoretical significance of this paper is that through the research of this topic and the new medical reform policy, it is conducive to further explore the relevant measures of the construction of employment service system in medical vocational colleges and improve the comprehensive quality of medical students [3]. We should change the view of employment, and then clarify the role orientation of oneself in society, and establish the correct employment orientation to meet the needs of the country, society and its own development.

In addition, around the background of the implementation of the new health care reform policy, the construction of medical vocational college employment service system is conducive to promote the transformation of medical colleges and realize the innovative, sustainable and stable development [4-5]. The curve changes of employment quality and employment rate are shown in Figure 1.

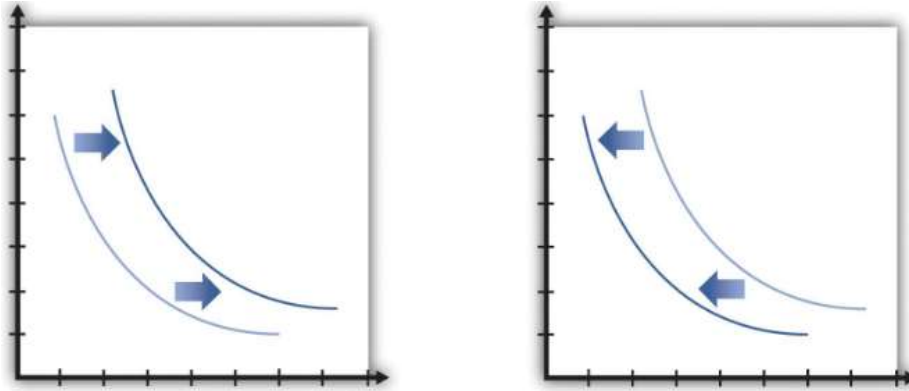


Figure1 The curve changes of employment quality and employment rate

## II. The influence of the new medical reform policy on Medical colleges

### 2.1 Teaching mode in favor of General Medical colleges

#### (1) Strengthen the education of rural doctors

China is a large country with the majority of agricultural population. China has always attached great importance to the development of rural areas. As an industry closely related to everyone, medical treatment is the basic medical service for the grassroots people, which has been highly valued by the government and the masses. For this reason, the education level of rural doctors is particularly important [6]. However, there are still some defects in the construction of rural doctor team in modern China: first, the most obvious problems in the construction of rural doctor team are that the overall education level is not high, the educational level is low, and the number of people holding practicing (Assistant) doctor qualification certificate is not many. The overall quality of rural doctors can not meet the health needs of the grassroots people, and there is still a big gap between them. Second, the relevant systems of attracting medical and health talents, stabilizing the medical and health team, and strengthening personnel education and training are not perfect. How to ensure the rational allocation of urban and rural basic health services resources, and how to coordinate the common development of urban and rural areas, so as to build a well-off society in an all-round way are still problems to be solved. Third, in most areas of China, the training network of rural doctors is not perfect. These problems need to be solved step by step through research and effective measures [7]. The process flow is shown in the following figure 2:

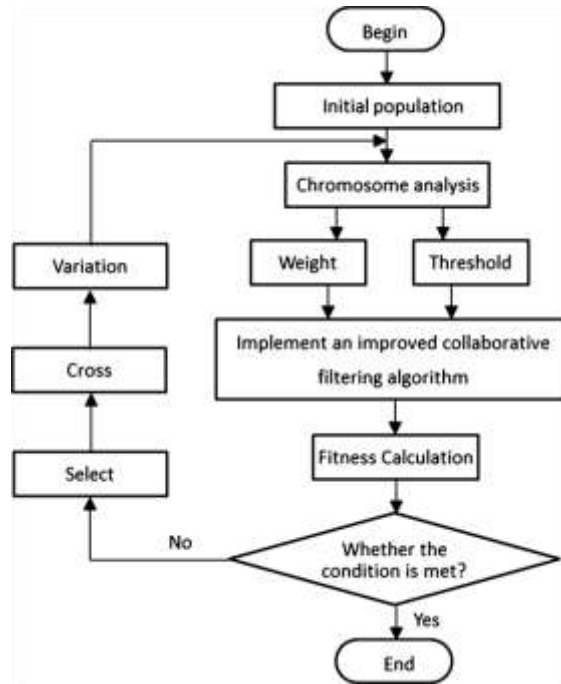


Figure 2 Algorithm flow of post information keywords based on hypergraph

In view of the above problems of rural doctors, the national rural doctor education plan (2011-2020) (hereinafter referred to as the "plan") came into being in this context. The "plan" proposed to vigorously strengthen the construction of rural doctors' teaching staff and personnel training network. Medical colleges and trade organizations should play a positive role in the education and training of rural doctors. According to the plan, medical colleges and industry organizations should strive to undertake the important task of training rural doctors and improve the professional level of on-the-job rural doctors [8-10].

## (2) Innovating the training mode of rural doctors' reserve talents

The plan not only puts forward the measures of education and training of rural doctors, but also puts forward the intention of innovating the training mode of rural doctors' reserve talents. According to the plan, under the historical background of building a well-off society in an all-round way, all localities should improve the access requirements for the education and training of rural doctors' reserve talents according to their own specific conditions, and ensure the smooth progress of the reserve talents training mode through the implementation of a series of relevant policies. Medical vocational colleges should take this as the theoretical basis to innovate their own talent training mode. In reality, the teaching management mode and talent training mode of many medical colleges are based on the market demand. This kind of personnel training mode has certain blindness and spontaneity, which is easy to cause the passive situation of medical students' employment. According to the relevant development requirements of the plan, the talent training mode of medical colleges and universities should be connected with the relevant national medical reform policies and relevant administrative departments in addition to the market. Similarly, the construction of rural doctors is not a matter of schools on the one hand. Schools should establish a talent training mode of the government, enterprises and schools under the guidance of the government.

## 2.2 It is conducive to expanding the scope of employment and guiding medical students to go to grassroots employment

### (1) Highlight the development of rural medical and health service system

In recent years, great changes have taken place in the construction of medical and health institutions in rural areas, and these changes will bring more employment opportunities for medical vocational college graduates. At present, many medical graduates tend to choose to work in urban areas when they are employed. They think that the

conditions in rural areas are difficult, the income is not high, the development prospect is not good, and they are not willing to go to rural areas to suffer. The new medical reform policy has solved the worries of medical graduates. First of all, the country implements a free training policy for rural doctors. The number of training is two or more times a year, and the cumulative training time must exceed two weeks. Moreover, excellent rural doctors have the opportunity to be sent to provincial medical institutions for training free of charge. Secondly, the amount of basic public health service subsidies in rural areas should be increased, and the wages of rural doctors should be appropriately increased. Finally, the pension problem of rural doctors has been solved. The government proposes that according to the actual situation of each region, for the retired doctors who have reached the age of 60, appropriate pension policies should be formulated so that the rural doctors can rely on their old age. The data studied in this chapter is the server log of a news website, and some of the log records are shown in the following figure 3:

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#Fields: date time c-ip cs-username s-ip cs-method cs-uri-stem cs-uri-query sc-status cs(User-Agent)
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /index.html - 200 Mozilla/4.0+(compatible;MSIE
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /all.css - 304 Mozilla/4.0+(compatible;MSIE+6
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/head.jpg - 200 Mozilla/4.0+(compatible
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c1.jpg - 304 Mozilla/4.0+(com
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c3.jpg - 304 Mozilla/4.0+(com
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c4.jpg - 304 Mozilla/4.0+(com
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c7.jpg - 304 Mozilla/4.0+(com
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c8.jpg - 304 Mozilla/4.0+(com
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c11.jpg - 304 Mozilla/4.0+(co
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c15.jpg - 304 Mozilla/4.0+(co
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c18.jpg - 304 Mozilla/4.0+(co
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c19.jpg - 304 Mozilla/4.0+(co
2013-12-15 08:05:23 172.16.96.22 - 211.66.184.35 80 GET /images/index_r2_c21.jpg - 304 Mozilla/4.0+(co
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Figure 3 Logging fragment

On the road of building a well-off society in an all-round way, the rural medical and health service system will usher in a new round of development opportunities, and the graduates of medical colleges will also have more choices in employment. In the face of the current severe employment pressure, rural doctors will be a good choice for the majority of medical vocational college graduates, and the rural medical and health service system will become the main institution to absorb graduates in recent years.

(2) Accelerate the formation of a diversified pattern of running hospitals, and encourage private capital to run non-profit hospitals

The new medical reform policy not only constructs the primary medical and health service institutions from the material resources and human resources, but also advocates the construction of a medical pattern with the participation of a variety of subjects. In China's real society, most hospitals are mainly public hospitals, while private hospitals are less. Such a pattern is not conducive to the healthy and long-term development of China's Hospital pattern. Based on this reality, the State Council promulgated the "opinions on deepening the reform of the medical and health system" to improve the current situation. The policy believes that in addition to the existing public hospitals, other factors should be actively encouraged to establish non-profit private hospitals. This also shows from another aspect that the state has changed its view on for-profit medical institutions and put them into the medical strategy of the whole country, greatly improving the status of for-profit medical institutions. In the future, the number of for-profit medical institutions will be more and more, and the quality will be better and better. Private hospitals will change the situation of "being neglected" in the past, and will be more encouraged and supported by national policies.

### III. Current situation and problems of employment service system in CZ Medical College

#### 3.1 Current situation of employment service in CZ Medical College

##### (1) Brief introduction of employment service organization

Over the years, the successive leaders of CZ medical college have attached great importance to the employment service and guidance of students in our school, and regarded this work as the "key project of the top leader of the party and government" of our school. In the work, it is required that the funds, institutions, personnel and office space should be in place.

First of all, financial support should be in place. Sufficient funds guarantee is the primary prerequisite for a school to do a good job in the employment of graduates. The second is the establishment of employment agencies. The employment of CZ medical college graduates adopts the two-level management system of University and department, with unified objectives, clear division of labor and respective responsibilities. Thirdly, the staffing is in place. The employment guidance center of the university has 6 full-time employees (including 3 full-time teachers in the employment guidance teaching and research section), including 1 associate professor, 3 with master's degree or above, and 2 with bachelor's degree. Over the years, in order to improve the quality of the employment team, the school has planned to send employment guidance personnel to participate in the training of employment guidance at all levels, and encouraged the counselors to actively obtain the qualification of national vocational instructors. Finally, ensure that office facilities are in place. CZ Medical College provides enough office space for the Employment Department of the school, including employment office, student quality evaluation room, employer negotiation room, employment consulting room, information room, etc. all kinds of office facilities in the office are complete, which can meet the needs of the Employment Guidance Center for office work and training activities.

## (2) Construction of employment service network

In order to better adapt to the urgent needs of the socialist market economic system for the employment reform of college graduates, CZ Medical College formally established the employment guidance center in September 2003, which is fully responsible for the employment related work of the whole school. After the establishment of the employment guidance center of CZ Medical College, in order to adapt to the development of the Internet era, the website construction of the employment guidance center of CZ medical college has been continuously promoted for many years. The content of the website includes college students' career planning evaluation, recruitment information, employment policy, career education and so on. By visiting the website, students can access the Internet anytime and anywhere to understand the employment information released by the school. In addition, the relevant employment guidance information provided by the website, such as college students' career development planning, preparation before the interview, how to make a resume and so on, can benefit the majority of college students, so as to understand the job-hunting skills in advance, so as to improve their employability according to their own actual situation.

## 3.2 Problems in employment service system of CZ Medical College

### (1) Employment service system needs specialization

From the current situation of CZ Medical College's employment service, its employment service system needs to be specialized. This is mainly manifested in two aspects: first, the degree of specialization of the employees in the employment guidance service system is not high, and the number of employees is small; Second, the employment guidance service has the characteristics of short-term and temporary, and the long-term employment guidance service has not been established.

As for the employees of CZ Medical College's employment service system, there are 6 employees in the employment center, including 1 associate professor, 3 with master's degree or above, and 2 with bachelor's degree. Obviously, for the employment service of the whole school graduates, this kind of human resource allocation is somewhat "thin". In addition, the overall education level of employees in CZ medical college employment service system is also low, and the degree of specialization is not high. Therefore, in the face of the current severe employment situation, it is difficult to form a scientific and effective guidance for CZ medical college graduates.

Another manifestation of the employment service system to be specialized is that the employment guidance service has the characteristics of short-term and temporary. Compared with the employment service in foreign developed countries, the employment service guidance in foreign colleges is mostly normalized and full process, while there is still a certain gap between the current employment service system in China's colleges and it. CZ medical college is no exception. Most of the lectures on employment guidance, career planning and related policies are held in junior year. In this way, the students who are close to graduation will feel like "cramming for the Buddha's feet temporarily", and the freshmen and sophomores will have the illusion that they will not begin to prepare until they

are about to graduate. Generally speaking, this kind of short-term employment guidance "can only provide graduates with career psychology and interview skills at a lower level, but can not provide scientific prediction and reasonable suggestions for students' career tendency and career planning".

(2) The employment service system is not perfect

At present, although CZ medical college has made some progress in the construction of employment service system, there are still some deficiencies, which need to be further improved. The employment service system of CZ medical college is mainly based on the employment guidance center, which is unitary. However, the government, human resource market, universities, students, enterprises and research, consulting, intermediary and other six elements of the employment service system for college students, mainly through the operation of the employment guidance center of colleges and universities and the human resource service market established by the government, provide the main support for the employment service system for college students. Therefore, CZ medical college takes the employment guidance center as the main support of the employment system, and lacks the active participation of students, enterprises and other institutional elements. Students in the employment service system in a passive situation, greatly reducing the enthusiasm of students in employment, it is easy to cause students in employment rely on schools, rely on teachers, it is difficult to form a "joint management, a chess" systematic situation.

#### **IV. Analysis on the causes of the problems in the employment service system of CZ Medical College**

##### 4.1 The school itself causes

(1) Personnel training is uncoupled from national policy requirements

In terms of the positioning of the whole medical vocational colleges in Hebei Province where CZ medical college is located, there are mainly two types of problems, which can be summarized as "two heavy and two light", namely "heavy theory, light practice" and "heavy speed, light quality". The so-called "emphasizing theory and neglecting practice" means that medical vocational colleges overemphasize the inculcation of professional theory, thus belittling the improvement of medical students' practice level. Generally speaking, the main reason for the above situation in the development process of CZ Medical College lies in the decoupling of personnel training and national policy requirements.

According to the requirements of the new medical reform policy, the state will strive to improve the overall level of primary medical and health institutions. Through cooperation with medical vocational colleges, the educational level of rural doctors will at least reach the level of specialist. However, according to the current employment service system of CZ Medical College, although the employment rate of CZ medical college is high, there are few policies related to cooperation with grass-roots medical institutions, and even the relevant national medical reform policies have not attracted the attention of the school. For example, on the official website of the employment guidance center of CZ Medical College, the relevant content of policy interpretation is the employment policy for college students nationwide, while the medical reform policy closely related to the development of medical students themselves is not published on the website of the employment guidance center of CZ medical college. Since CZ medical college itself has not paid enough attention to this problem, let alone medical students?

(2) Unreasonable structure of human resources

The existing human resource structure of CZ medical college is unreasonable. There are mainly the following performances: first, there is a gap in the education background of the teachers. The distribution of teachers in the education level is not uniform, which makes students have a big gap in their hearts when they receive professional training, which affects the enthusiasm of students' learning, and is not conducive to the improvement of students' professional level, and then affects the employment of students. Secondly, the age difference of teachers is small, which makes the school dispute in the process of teaching task assignment, which affects the enthusiasm of teachers' work. Third, the structure of teachers' titles is unreasonable. This difference is mainly to reduce the efficiency of education work, and the quality of education is also uneven. Fourth, the proportion of teachers with double teachers is low. Fifth, the proportion of teachers and students is not coordinated. The number of students is

far beyond the workload of school teachers, which makes teaching tasks difficult to complete with quality and quantity. These disadvantages make it difficult for the employment guidance teachers to form a benign echelon planning, which will lead to the deviation of the distribution of talent resources and material resources in the school, and affect the quality of talent training. Therefore, facing the current situation of human resources in CZ Medical College, the employment guidance service will have the characteristics of randomness and transience. The corresponding flow chart is shown in Figure 4.

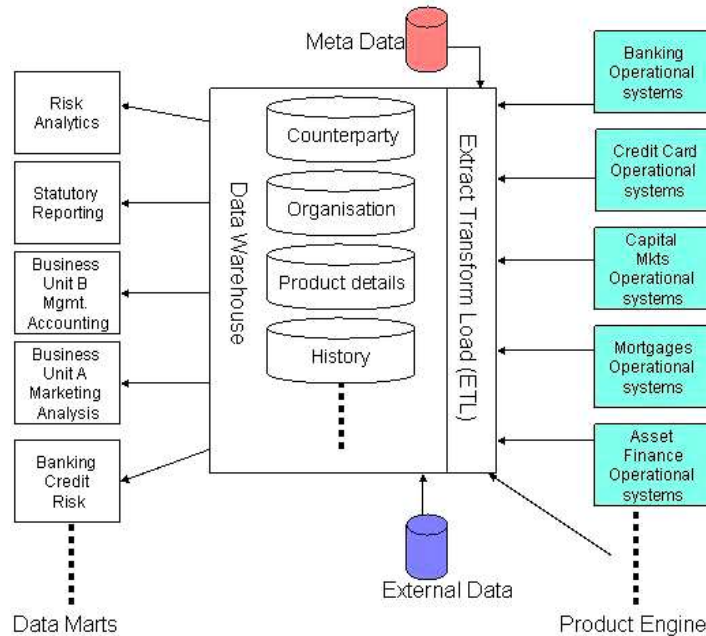


Figure 4 Algorithm flow

#### 4.2 The reasons of the employer

Although CZ medical college has carried out school enterprise cooperation with many family units, and established the "directional practice" mode, so that the employment rate of the graduates of CZ medical college has been maintained at more than 90%, which is worthy of affirmation. However, the depth of cooperation between CZ Medical College and employers needs to be further strengthened, and the enthusiasm of employers in the employment service system is not high. Coincidentally, this has become a common phenomenon in the cooperation between other colleges and employers. The main reason for this phenomenon is the lack of laws and regulations between interns and employers. This has become the main factor hindering the in-depth cooperation between schools and employers in the development of higher vocational education.

In addition to the insufficient depth of school enterprise cooperation, there is another defect in the current employment units, that is, the unreasonable employment mechanism of enterprises. At present, many employers have not formed a fair, open and reasonable employment mechanism.

First, the degree of "transparency" of employers is low. Employers, especially small and medium-sized enterprises, have a low degree of openness in their employment plans, job vacancies and employment situations. In addition, due to the lack of corresponding supervision mechanism, employers have great randomness in recruitment, and the self-interest of higher vocational college graduates is easily damaged by illegal enterprises. Second, there is unreasonable consumption of talents in employers. In recent years, in the process of recruiting talents, employers blindly pursue higher education without considering the actual situation of the employer. This will cause a great waste of human resources, making the situation of graduates' employment difficult to further deteriorate. Third, there are utilitarian phenomena in the employing units. In addition to highly educated graduates, employers also

prefer graduates with rich work experience, which is particularly obvious in medical vocational colleges. Because of the lack of experience and education of medical students, it will increase the "risk" of hospital investment, and hospitals are generally reluctant to invest in on-the-job training for inexperienced medical graduates.

## **V. Research on the Countermeasures of employment service in Medical Vocational Colleges under the situation of new medical reform**

### 5.1 Establishing correct service concept of medical students' employment guidance

Medical colleges should attach great importance to the new medical reform policy, establish a special propaganda team for the new medical reform policy, strengthen the education on the new medical reform situation of medical higher vocational college students, so that medical students can understand the employment development opportunities brought by the new medical reform policy in time. For example, at present, the state attaches great importance to the construction of rural doctors in grassroots areas, and has issued the implementation opinions of the general office of the State Council on Further Strengthening the construction of rural doctors. This policy is a valuable employment place for medical vocational college graduates with college degree.

The main task of specialty setting and enrollment stage is to reasonably predict the professional employment environment and employment competitiveness according to the employment quality evaluation and employment analysis. According to the market research and employment forecast, we should set up new majors and make good use of the school's superior resources to do a good job in professional training, so as to improve the employment competitiveness and form a good employment image. The main task of education and training stage is to carry out professional quality education of medical students, supplemented by career education, psychological education of college students, legal education and ideological and political education.

### 5.2 Improving the employment service mechanism of Medical Vocational Colleges

#### (1) Policy incentive mechanism

Medical vocational colleges will guide medical graduates to the Grassroots Employment in an important position. The employment management departments and departments of school level graduates should strengthen the basic work, actively respond to and implement the relevant deployment of the Party Central Committee and the Ministry of education, and actively expand the employment market of medical graduates, so as to create good conditions for graduates to work in grassroots medical institutions. Therefore, medical vocational colleges should establish a policy incentive mechanism related to the new medical reform policy to encourage students to go to the grassroots employment. Medical colleges should coordinate with education administrative departments and health administrative departments to break the current traditional education mode of unified enrollment, charging and independent employment. To establish and implement the projects related to the Grassroots Employment of medical graduates, as long as the medical students who voluntarily go to the grassroots, go to the western region, go to the hard areas and hard industries for employment, after signing the relevant agreements for Grassroots Employment, they will be able to reduce the tuition fees during their schooling.

#### (2) Talent incentive mechanism

The key of talent incentive mechanism lies in "people". Only by stimulating people's potential to the maximum extent and bringing people's subjective initiative into full play can individual and collective goals be realized.

First of all, pay attention to the combination of material incentive and spiritual incentive. In medical vocational colleges, through the establishment of relevant material incentive policies and spiritual incentive policies, to stimulate the motivation of in-service teachers, mobilize the enthusiasm of teachers, and make them become a part of the employment service system. Secondly, we should pay attention to the combination of long-term incentive mechanism and short-term incentive mechanism. Let the relevant professional teachers to participate in the construction of the employment service system is not like doing part-time jobs, as long as one or two classes before medical students graduate. This will only achieve half the result with half the effort, can not really effectively



affect the improvement of the comprehensive quality of medical students. In addition to classroom teaching, other extracurricular activities should also be paid attention to. Finally, we should pay attention to the combination of talent introduction and training. In view of the low degree of specialization of employment guidance personnel in medical colleges, this paper carries out relevant employment guidance training activities to cultivate reserve talents for the future development of employment service system in colleges, so that they can make more long-term career planning for students.

## VI. Conclusion

Generally speaking, there is still a certain gap between the construction of employment service system of medical vocational colleges and the overall goal and requirements of national medical reform policy. Therefore, the construction of employment service system in medical colleges must attach great importance to the new medical reform policy of the party and the state, and timely seize the employment opportunities brought by the new medical reform policy for medical students in colleges. The times are always changing and developing. How to comply with the trend of the times in the process of medical reform, improve the teaching quality and school running level of medical colleges, and how to improve the employment service system of medical colleges are still practical problems worthy of scholars' consideration. It can be said that the theoretical research and practical construction of employment service system in medical vocational colleges have a long way to go.

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