ISSN 2618-1584 Vol. 6, Issue 10: 61-65, DOI: 10.25236/FMSR.2024.061010

Research on the Construction of Professional Competency Model for Standardized Training of Specialist Physicians

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Abstract: *With the development of medical education, China has carried out standardized training of specialists (hereinafter referred to as "special training") in some provinces and cities. However, due to the lack of unified training standards, there are some problems in the course of specialized training, such as unsystematic training content and uneven quality, which affect the learning enthusiasm of medical students and the training effect of hospitals to a certain extent. Therefore, it is of great significance to construct a scientific and reasonable vocational competency model for improving the quality of specialized training. This paper reviews and summarizes the relevant literature on vocational competency at home and abroad, and combined with expert opinions, proposes the conceptual framework and characteristics of vocational competency model for specialized training, which provides a theoretical basis for further research on vocational competency model for specialized training in the future. Therefore, this paper summarizes the construction of professional competency model for standardized training of specialist doctors. The key indexes and weights of the vocational competency model are determined preliminarily in order to provide reference for the subsequent management decision-making of specialized training.*

Keywords: *A specialist physician; Standardized training; Vocational competency model; construct*

1. Introduction

In 2018, The General Office of the State Council issued “theOpinions on Deepening the Coordination between Medical Education and Further Promoting the Reform of Medical Talent Training”, emphasizing the need to accelerate the establishment and improvement of medical education and physician training systems in line with China's national conditions. In the same year, the General Office of the National Health Commission and the General Office of the Ministry of Education jointly issued “the Notice on carrying out the Pilot Work of the Standardized Training System for Resident Doctors”, combining residential training with specialized training, marking the formal establishment and gradual implementation of China's residential training system.

2. The development process of standardized training for specialists

For a long time, the domestic doctor training mode mainly includes two types: post-graduation education and on-the-job training. Among them, post-graduation education refers to the process of completing theoretical study and clinical practice in school; On-the-job training refers to the process of obtaining the professional qualification certificate of the corresponding specialty through short-term intensive training. The so-called "standardized training" is the process of systematic learning and training of various medical personnel such as residents, specialists and general practitioners in terms of medical professional knowledge and clinical skills, so as to improve their clinical diagnosis and treatment ability and scientific research ability. At present, many provinces and autonomous regions such as Beijing, Shanghai, Guangdong and Zhejiang have launched standardized training for specialists. In 2017, Peking University People's Hospital, Beijing Friendship Hospital Affiliated to Capital Medical University, Ruijin Hospital affiliated to Shanghai Jiao Tong University School of Medicine and other units were included in the national standardized training base for general practitioners. At the same time, with the release of the Implementation Opinions of The General Office of the State Council on Reforming and Improving the Education of General Practitioners, specialized training of general practitioners has gradually received attention. Since 1965, the United States first carried out the standardized training of residents,

ISSN 2618-1584 Vol. 6, Issue 10: 61-65, DOI: 10.25236/FMSR.2024.061010

and then the United Kingdom, Canada, Japan, Australia and other countries have also carried out this work. In Europe, in addition to the traditional standardized training for residents, continental European countries also carry out standardized training for assistant physicians, standardized training for specialists and standardized training for senior specialists. From a global perspective, the model of residency training is constantly evolving toward specialization. However, the different national conditions of different countries and the different training modes in different regions directly lead to the uneven quality of training.Therefore, it is urgent to construct a unified training standard that can take into account individual differences and regional characteristics, so as to better regulate the training process and quality control and ensure the smooth development of training work. Occupational competence refers to the ability of an individual to work in a specific field. It means that an individual has a strong cognitive level, behavioral intention, emotional state and physical condition for the target task, and can consciously mobilize various resources and actively participate in the work to achieve the expected results [1]. In foreign countries, professional competency model as a scientific evaluation system is widely used in enterprise human resource management, medical institution human resource management, educational institution teacher evaluation, military college student evaluation and many other fields. In recent years, domestic scholars have also carried out a lot of research on the professional competency of teachers, nurses and students, which has laid a good theoretical foundation for the localization of the professional competency model.

Based on the above background, this construction study aims to explore how to build a scientific and reasonable professional competency model for specialist residency training (STT) under the existing standardized training model for residents. This study provides reference for establishing scientific and reasonable standardized training standards for specialist doctors.

3. Progress in the construction of vocational competency model

Occupational competence refers to the ability of an individual to effectively use knowledge and skills to achieve work objectives in a particular job or task. Its essence is to promote the improvement of organizational performance. In 1986, American scholar Hertzlitt put forward the concept of "competency". In 1990, McGonigal et al. summarized four competency characteristics through a large number of surveys and studies: initiative, adaptability, achievement orientation and commitment. Since 1980, China's focus on competence has gradually increased. Zhang Guangming et al. believe that competence includes three dimensions: knowledge, skill and personality. Wang Weiguo et al. believe that competency can be divided into five categories: general competency, professional competency, interpersonal competency, leadership competency and strategic competency. Although there are some differences in the definition of vocational competence at home and abroad, they all emphasize the various abilities and qualities that individuals should have. It can be seen from the above literature that different researchers have described vocational competency from different perspectives, which has laid a theoretical foundation for the construction of vocational competency model for specialized training.

3.1. Competency model construction

In organizational behavior, competency model is to summarize key capabilities through the analysis of the environment of individuals and organizations, and explain and explain these capabilities through modeling. Because of the different work contents and responsibilities of different disciplines and different organizations, it is necessary to construct competency models in different fields or industries.

According to the training characteristics of special training objects, we believe that the professional competency model of special training should be constructed from the following dimensions: First, theoretical knowledge, including professional theoretical knowledge and clinical practice skills; The second is psychological quality, mainly including personal quality (such as responsibility, self-confidence), teamwork ability and communication ability; The third is social ethics, mainly including the awareness of compliance with laws and regulations, medical ethics and medical humanistic care spirit. Through the above dimensions, the competency model based on vocational characteristics of specialized training can not only guide the reform of specialized training teaching, but also provide a reference for the formulation of a reasonable evaluation system, so as to establish a scientific and systematic evaluation mechanism. Therefore, the construction of this model is of great significance for improving the training quality of specialized trainees [2].

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3.2. Development of competency assessment tools

Interview and questionnaire survey are commonly used in competency research. Therefore, the design of scientific and effective assessment questionnaires or tools has become the primary problem. (1)Questionnaire survey method: This method collects information by sending questionnaires to the respondents. Although this method is easy to operate, it is affected by subjective factors, and its reliability and validity are difficult to guarantee, and different people will have different understandings of the same topic. (2)Interview method: This method requires researchers to conduct in-depth, comprehensive, equal and open communication with the respondents. However, because many respondents are reluctant to provide honest opinions, only partial information is usually obtained. In addition, the interviewer cannot record in detail what happened in the interview process, and the results are difficult to verify. (3)Behavior observation method: refers to the tracking and observation of outstanding personnel in a specific field and the written record of the observed behavior activities. This method can fully reflect the actual work of the respondents, so as to make the assessment tool more authentic. (4) Delphi method: Select experts as investigators by random sampling, require each investigator to provide specific feedback, and set up a centralized meeting to discuss and unified opinion processing mechanism. As for the unexpressed opinions, they were collected and sent to the team members for discussion to reach a conclusion. According to the above two methods, the core elements are finally determined and arranged according to their importance to obtain the weight coefficient of each index [2-3].

3.3. The difference analysis of different occupational competency studies

In the field of medicine, the research hotspots at home and abroad mainly focus on the professional development and training of doctors, doctor qualification examination and so on. However, the standardized training of specialists in China is a new thing that has been implemented in recent years, so there is no relevant data support. At present, there are few researches on the status quo of professional competence of specially trained doctors in China. The studies on professional competence of doctors in the literature mainly focus on the measurement of professional competence and clinical competence of doctors, some of which overlap. Therefore, the establishment of a scientific and appropriate competency evaluation index system for standardized training of specialized doctors can meet the increasing needs of medical education for the ability evaluation of senior medical talents and ensure the requirements of education and teaching in higher medical colleges for the quality of personnel training. At the same time, this study also provides theoretical support and practical guidance for the practice of standardized training of specialists, which is helpful to improve the overall quality and clinical ability of specialists. In practical application, the professional competency model of standardized training for specialists can be used as an important basis for training program design, training process management and training effect evaluation. By comparing various abilities and quality standards in the model, training can be carried out more targeted and the training effect and quality can be improved [3-4]. At the same time, this model can also be used as an important reference for the professional development of specialists to help them clarify their own career development direction and path.

4. Construction of vocational competency model for specialized training

The standardized training of specialist doctors is a kind of continuing education for doctors in clinical practice base or general practitioner training center, which is formulated by the health administration department and the medical education management department. It is of great significance to improve the level of primary medical and health services and train the team of high-level clinicians. With the promotion of the new medical reform policy, the standardized training of specialist doctors has become a work encouraged by the state. However, there is no clear evaluation system in the current policy of specialized training. How to design a scientific and reasonable index to measure the comprehensive ability of specialized training medical students has always been a hot issue. At present, many experts and scholars at home and abroad have devoted themselves to the theoretical construction and empirical research of vocational competence, but no unified concept of vocational competence has been formed. The Dictionary of Professional Competence defines competency as "the potential for an individual to excel or excel in a particular field of work"; However, Chinese scholars believe that competency refers to "the comprehensive level of skills, knowledge and attitude needed to complete the work". Because researchers from different disciplines have different understandings of competency and lack the support of relevant research results, it is difficult to define it uniformly. In essence, professional competency is closely related to personal quality, personality traits and organizational characteristics, but at the same

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time, it also has distinct industry characteristics, with the following characteristics: (1)Complexity. Vocational competence is a complex system, composed of multiple elements, including professional knowledge, professional skills, personal quality, behavior habits and other factors, need to be in-depth analysis and research for different vocational positions, in order to accurately grasp the connotation and characteristics of vocational competence. (2) Scalability. Vocational competence can be quantified, easy to measure and evaluate, so it can be transformed into a specific index system to guide teaching activities and training.(3)Dynamic. Vocational competence is not invariable, but constantly changes and updates with the development of social economy and scientific and technological progress. Therefore, we should keep track of the development of the industry in a timely manner, and adjust the training content and methods according to the needs of The Times.(4)Fairness. Vocational competence should focus on fairness, that is, equal treatment for all personnel, regardless of gender, age, race, education and other differences, to ensure that everyone has access to equal training opportunities and treatment. (5) Portability. Vocational competency is not only applicable to a certain occupational position, but also can be transferred to other similar positions to help trainees better adapt to the new working environment and requirements. (6)Consistency. Professional competence should be aligned with the strategic objectives of the organization and contribute to the realization of the organization's values and mission. (7)Sustainability [5]. Professional competence is the product of long-term accumulation and continuous learning, and it needs to constantly improve and improve itself to adapt to the rapidly changing medical and health service market.

4.1. Construction idea

From the above, it can be seen that several vocational competency models have been proposed at home and abroad. Although these models have different emphases, they all involve the connotation, dimension and evaluation index of vocational competence. The behavioral scholars represented by the American psychologist McClelland believe that occupational competence is a comprehensive ability that reflects the performance or effectiveness of an individual's work, which is related to the skills required by a specific job and has a measurable ability. However, scholars in the field of social cognition, represented by the famous Canadian management scientist Charles Handy, regard professional competence as a subjective concept, which is closely related to personal beliefs, values, attitudes and other factors. In China, the Talent Exchange Service Center of the National Health and Family Planning Commission organized experts to compile the Professional Competency Standards for Physicians (hereinafter referred to as the "Standards"), which also contains the relevant content of professional competency training, mainly including professional knowledge, clinical thinking, communication, medical ethics, professional ethics and other 5 first-level indicators and 17 second-level indicators. It has been officially released and implemented. The "Standards" put forward clear training requirements for specialized medical students, but there is still a lack of corresponding evaluation system [5-6].

4.2. Model construction

Through the application of multiple methods such as literature research, expert consultation and Delphi method, and after a large number of literature investigations and discussions, eight core elements are finally determined, which are: basic medical knowledge, clinical ability, communication ability, teamwork spirit, problem solving ability, critical thinking, leadership ability and professional ethics. The eight core elements are combined according to a certain logical sequence to form a professional competency model of specialized training, which is embodied in three aspects: first, the time of specialized training is the cross section, and the national doctor qualification examination cycle is compared; Second, it is divided into four disciplines of internal and external women and children according to the content of specialized training; Third, in each section, it is divided according to the specialized training time and technical requirements.

5. Summary and suggestion

The construction of professional competency model for standardized training of specialists aims to clarify the ability and quality standards that should be achieved by specialists in the training process, and provide a basis for the formulation of scientific and reasonable training programs, so as to improve the clinical skills and comprehensive quality of specialists and ensure that they can better meet the needs of medical services. The weight of each dimension in the vocational competency model constructed by this research is reasonable, and each dimension is positively correlated with each other. The model can reflect

ISSN 2618-1584 Vol. 6, Issue 10: 61-65, DOI: 10.25236/FMSR.2024.061010

the professional ability, attitude and behavior of the trainees, and provide a basis for the establishment of scientific and reasonable teaching plan in the colleges, and also provide a reference for the assessment and evaluation of the medical students in the hospitals. However, as there is no unified assessment standard or evaluation system in China at present, this model still has certain limitations. It is necessary to combine the medical service needs of various regions and the existing resource conditions, and through continuous practice summary and improvement, gradually form a set of standardized training professional competency model for specialist doctors suitable for China's national conditions. This model should be applied to practical teaching in the future, and timely adjusted according to the actual situation [7].

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