Journal of Contemporary Educational Research, 2026, Volume 10, Issue 4
http://ojs.bbwpublisher.com/index.php/JCER
Online ISSN: 2208-8474
Print ISSN: 2208-8466

Innovative Path and Exploration of Neurology Clinical Teaching Based on Job Competence

Jianmeng Lv*, Xuan Wang, Meimei Zhang, Xiao Qin, Juan Liu, Yajuan Pan

No.2 Department of Neurology, Shaanxi Provincial People's Hospital, Xi'an 710000, Shaanxi, China

Corresponding author: Jianmeng Lv, 29328553@qq.com

Abstract: With the deepening of medical system reform and the development of clinical medical education, job competence has become the core standard for evaluating the professional ability of clinicians. Neurology is a discipline with both theoretical depth and practical complexity and the clinical teaching faces the challenges of complex knowledge systems, diverse diseases, and high requirements for diagnosis and treatment skills. Based on the core connotation of job competence, combined with the current situation and existing problems of clinical teaching in neurology, reconstructing teaching objectives ("knowledge-skills-ability-literacy" integration), innovating teaching methods ("CBL + PBL + SP + scenario simulation + MDT" diversified teaching models), improving the evaluation system (integrated evaluation of "process + outcome"), teacher team construction (systematic training + incentive mechanism + team construction), integration of teaching resources ("online + offline" and "on-campus + off-campus" combination), and exploration of the construction of a job competency-oriented neurology clinical teaching innovation system. We aim to cultivate high-quality neurology professionals and provide theoretical references and practical paths.

Keywords: Job competence; Neurology; Clinical teaching

Online publication: May 12, 2026

1. Introduction

Neurology, as an important branch of clinical medicine, involves the diagnosis and treatment of central nervous system, peripheral nervous system, and muscle diseases. It has a wide variety of diseases, causes involving genetics, infection, immunity, metabolism, blood vessels, and other fields, and clinical manifestations are complex, diverse, and occult. It has very high requirements for the professional knowledge, clinical skills, thinking ability, and occupational literacy of physicians. With the aging process of the population gradually accelerated, the incidence of cerebrovascular disease, Parkinson's disease, Alzheimer's disease, and other neurological diseases in the elderly has been increasing year by year. According to the *Chinese Stroke Prevention and Control Report (2023)*, the prevalence of stroke in people aged 40 years and older in China amounts to 12.42 million, and the affected population is younger. Among survivors, about 75%

left sequelae and 40% had severe disability, bringing a heavy medical burden to society and families. At the same time, the rapid application of new technologies such as precision medicine, artificial intelligence, and neurointervention in the field of neurology puts forward higher requirements for the professional knowledge update ability, technical operation ability, and clinical decision-making ability of clinicians.

With the continuous development of the medical industry, the job competence of physicians has become a key element of the overall quality of the medical team [1]. Clinical teaching is a bridge connecting medical theory with clinical practice, and is a key link in cultivating qualified clinicians and high-level clinical talents. The comprehensive element requirements for physicians are stricter. At present, neurology clinical teaching in China has the problems of disconnection between teaching objectives and job needs, single solidification of teaching methods, and light results in the evaluation system, which leads to insufficient training of clinical thinking ability, independent learning ability, and doctor-patient communication ability among medical students, and they cannot quickly become competent in neurology work. Based on this, by constructing an innovative path of clinical teaching in neurology based on job competence, this paper effectively solves the drawbacks of traditional teaching models and promotes the transformation of medical education in China from "knowledge imparting type" to "ability training type."

2. Core dimensions and connotation of competence for clinical positions in neurology

Job competency theory originated in the 1970s and was proposed by McClelland, a professor at Harvard University in the United States, whose core is "identifying and cultivating key competencies that can be competent for work oriented to job needs" [2]. Subsequently, this theory has been widely used in various industries and has formed a relatively mature theoretical system and practice mode. The American Board of Accreditation for Graduate Medical Education proposed a framework of "six core competencies" for clinical medical practitioners needs, including medical knowledge system, patient diagnosis and treatment services, practical skills improvement, interpersonal communication skills, professional literacy, and systematic practical application, which is widely used in clinical teaching in multiple disciplines such as internal medicine, surgery, and neurology [3]. Combined with the subject characteristics of neurology and the needs of clinical positions, with reference to existing research results [4,5], this paper summarizes the competence of neurology clinical positions into six core dimensions, and each dimension is interrelated and mutually supported.

First, solid expertise reserves. Professional knowledge covers three levels: basic medical knowledge, clinical medical knowledge, and professional cutting-edge knowledge, and is the basis for neurologists' competence in clinical work. Second, outstanding clinical practical skills. Mainly includes medical history taking, physical examination, auxiliary examination interpretation, diagnosis and treatment plan development, and other aspects, is the core ability of neurology physicians to carry out diagnosis and treatment. Thirdly, keen clinical thinking ability. Neurology disease "the same disease, different disease with the same disease" characteristics are significant, requiring physicians to have systematic thinking, critical thinking, and logical thinking, disease phenomenon analysis, synthesis, judgment, and reasoning. Fourth, good doctor-patient communication ability. Neurology patients are often accompanied by physical dysfunction, cognitive impairment, emotional disorders, and other problems, requiring physicians to have

empathy, language expression, and communication skills. Fifth, rigorous professional literacy and teamwork ability. Professional literacy is a concentrated embodiment of physicians' professional ethics, professional attitude, and professional responsibility, including medical ethics, professionalism, and awareness of medical safety. At the same time, neurology diagnosis and treatment of diseases often require multidisciplinary collaboration and need physicians to have good teamwork ability. Sixth, continuous lifelong learning ability. Neurology, as a frontier discipline, new theories and technologies emerge endlessly, emphasizing the lifelong learning ability of physicians, including independent learning ability, information screening ability, and scientific research innovation ability.

3. Status quo and existing problems of clinical teaching in neurology

3.1. Vague teaching objectives positioning and disconnection from job needs

Traditional clinical teaching objectives in neurology focus on "imparting professional knowledge," focus on the explanation of theoretical contents such as the etiology, pathology, and clinical manifestations of diseases, emphasize "what to teach," and ignore the training of students' core dimensions of job competence such as clinical thinking, doctor-patient communication, and professional literacy [6]. This positioning of teaching objectives makes it difficult for medical students to quickly adapt to the actual needs of clinical posts despite having a certain knowledge reserve after graduation, and multiple problems such as "will see and will not do," "will do and will not say," "high score and low ability" appear.

3.2. Single solidification of teaching methods and insufficient subjective initiative of students

At present, clinical teaching in neurology is still based on the traditional model of "teacher-led," and the teaching method is relatively single. For example, theoretical teaching mostly adopts the teaching mode of "filling duck type," students passively accept knowledge, lack the opportunity of active thinking and independent inquiry [7]; bedside teaching mostly adopts the mode of "teacher demonstration-student imitation," and students are difficult to participate in the process of diagnosis and treatment decision-making. This teaching mode inhibits students' subjective initiative and innovative thinking, and is not conducive to the cultivation of students' clinical thinking ability and independent learning ability.

3.3. Imperfect evaluation system and the process of heavy results is light

The traditional neurology clinical teaching evaluation system is mainly based on terminal evaluation, which mainly assesses students' learning effect through theoretical examination, skill operation assessment, and other means, ignoring the importance of procedural evaluation [8]. The lack of process evaluation makes teachers unable to understand students' learning progress and existing problems in a timely manner, and it is difficult to carry out targeted guidance. In addition, there is a lack of multiple evaluation subjects such as students' self-assessment, mutual assessment, and patient evaluation, and the objectivity and comprehensiveness of evaluation results are insufficient.

3.4. Lagging teachers' team construction and poor teaching ability

Currently, neurology teaching teachers are mostly clinicians and have solid professional knowledge and rich clinical experience, but lack systematic education, psychological knowledge, and teaching methods

training. Some teachers do not have a deep understanding of the concept of job competence, and still follow the traditional teaching model of "master with apprentice" [9]. In addition, some teachers fail to adapt to the clinical teaching needs oriented by job competence due to their busy clinical work.

3.5. Insufficient integration of teaching resources and weak multidisciplinary coordination

The diagnosis and treatment of diseases in neurology involves multiple subject areas [10], but there is insufficient synergy between various disciplines in current clinical teaching, with a lack of effective integration of teaching resources. For example, in the teaching of stroke patients, there is a lack of participation of teachers in the emergency department, imaging department, rehabilitation department, and other disciplines. In addition, the digitization of teaching resources is low, lack of high-quality virtual simulation teaching platforms, online curriculum resources, etc., making it difficult to meet students' independent learning needs.

4. Construction of innovative paths of clinical teaching in neurology based on job competence

4.1. Reconstruction of teaching objectives core requirements for competence of anchoring positions

First, in terms of knowledge objectives, break the barriers to the traditional subject knowledge system and build a knowledge framework integrating "basic medicine–clinical medicine–professional frontiers." Students are required to thoroughly master basic medical knowledge of neurology, diagnosis, and treatment specifications for common diseases, understand the progress in the diagnosis and treatment of complex neurological diseases, the key points in the diagnosis and treatment of rare diseases, and pay attention to the progress of professional frontiers [11].

Second, in terms of skill goals, strengthen the hierarchical cultivation of clinical practical skills and divide skill training into three levels: "basic skills–core skills–advanced skills." Basic skills include medical history taking, neurological physical examination, etc. Core skills include auxiliary examination interpretation, diagnosis and treatment plan development, etc. Advanced skills include difficult case diagnosis and treatment, critical and severe rescue, etc.

Again, in terms of competency goals, a framework for "Base-Enhanced-Precise Layer" training was constructed for students at different levels. For junior students, cultivate preliminary case analysis ability, and be able to make simple diagnosis and differential diagnosis of typical cases; for junior students, it is required to be able to analyze complex cases and develop treatment plan ability; for senior students, cultivate innovative thinking ability, and be able to carry out scientific research exploration in combination with clinical practical problems.

Finally, the goal of literacy, professional literacy, and humanistic care throughout the teaching process. Students are required to establish the service concept of "patient-centered," master doctor-patient communication skills, and have the spirit of teamwork, lifelong learning awareness, and medical safety awareness.

4.2. Innovating teaching methods to stimulate students' subjective initiative

On the one hand, case-oriented teaching (CBL) is combined with problem-oriented teaching (PBL) [12,13]. Select typical and difficult cases in neurology, and carry out teaching based on the case or problem orientation through the process of "Case Presentation–Problem Raising–Group Discussion–Summary." For example, "A 62-year-old male patient presented with sudden onset of right limb weakness for 2 hours, how to diagnose and treat?"—organized students to discuss in groups, independently consulted the literature, analyzed the possible causes, diagnostic steps, and treatment options, and finally summarized and commented by the teaching teacher to help the trainees construct systematic diagnosis and treatment ideas, trained the students' clinical thinking ability and independent learning ability.

On the other hand, standardized patient (SP) is combined with scenario simulation teaching [14]. In terms of standardized patients, neurology patients who can mimic different symptoms (such as post-stroke aphasia), students improve the standardization of doctor-patient communication ability and clinical skill operation through communication with standardized patients for history taking and physical examination. In terms of virtual simulation teaching, it can simulate the rescue scene of critical and severe neurological diseases (such as status epilepticus), allowing students to perform rescue drills in a virtual environment, reducing clinical practice risks, and improving emergency response ability.

Finally, the Multidisciplinary Collaborative Teaching (MDT) Model [15]. For the difficult and complex cases in the neurology department, teachers from the imaging department, rehabilitation department, neurosurgery, and other disciplines are invited to jointly participate in the case discussion and analyze the cases from the perspective of different disciplines to let students understand the whole process of diagnosis and treatment of the disease. For example, in the teaching of multiple sclerosis patients, imaging teachers explain MRI imaging characteristics, rehabilitation teachers explain rehabilitation treatment options, neurology teachers explain drug treatment principles, and cultivate students' multidisciplinary thinking and teamwork ability.

4.3. Improving the evaluation system and realizing the integrated evaluation of "process + result"

First, strengthen the process evaluation. Process evaluation runs through the whole process of clinical teaching, and comprehensively records students' learning progress through classroom performance, case discussion speeches, bedside teaching assessment, and simulated diagnosis and treatment training. For example, in case discussion, students' case analysis ability and expressiveness were evaluated; in bedside teaching, students' history taking, physical examination ability, and doctor-patient communication ability were evaluated.

Second, optimize the terminal evaluation. Reforming the content and method of terminal evaluation, reducing the examination of knowledge memory, and increasing the examination of clinical thinking and practical skills. The theoretical examination uses subjective questions such as case analysis questions and topic questions to examine students' ability to apply knowledge; skill assessment draws lessons from Peking University Health Science Center, Fujian Medical University, and other colleges and universities, uses objective structured clinical examination (OSCE) model, sets multiple examination stations, and comprehensively evaluates students' clinical practice ability.

Third, a multivariate evaluation subject is introduced. Establish the evaluation subject system of the "teacher-student-patient" trinity. Teacher evaluation focuses on students' professional ability and learning

attitude; student self-evaluation and mutual evaluation focus on self-reflection and teamwork performance in the process of learning; patient evaluation focuses on students' doctor-patient communication ability and service attitude. Through multiple subject evaluations, the impartiality and credibility of evaluation results are improved.

4.4. Strengthening the construction of teachers and improving job competence

On the one hand, carry out systematic teacher training. Organize teaching teachers regularly to participate in pedagogy and psychology knowledge training, as well as wisdom teaching and job competence teaching methods training (such as CBL, PBL, MDT, and other teaching methods training); at the same time, invite experts in the field of education and excellent teaching teachers to carry out teaching lectures and demonstration teaching to improve teachers' teaching theoretical level and practical ability.

On the other hand, improve the teacher incentive mechanism. Establish a performance evaluation system for clinical teaching, incorporate teaching workload, teaching quality, teaching reform results, etc. into performance evaluation indicators, link with professional title promotion, evaluation and evaluation, performance and salary, etc., and stimulate teachers' enthusiasm and initiative to participate in teaching; in addition, establish a special fund for teaching reform, support teachers to carry out teaching research projects oriented by job competence, and encourage teachers to publish teaching research papers and prepare characteristic textbooks.

In addition, an interdisciplinary teaching team is formed. Break the boundaries of departments, establish a teaching team composed of senior physicians in neurology, physicians in related disciplines, and educational experts, jointly develop teaching plans, develop teaching resources, and carry out teaching reform, build a teacher team with "strong clinical ability, high teaching level, and sufficient innovation consciousness," and promote job competence orientation clinical teaching in neurology.

4.5. Integrating teaching resources and building diversified teaching platforms

First, build a digital teaching resource bank. Integrate neurology typical cases, imaging data, operating videos and other resources to build a digital teaching resource bank; at the same time, develop online courses (such as MOOC class, microclass) [16], covering the basic theory of nervous system diseases, diagnosis and treatment specifications, cutting-edge progress and other contents for students to learn independently; build a virtual simulation teaching platform to simulate the neurology clinical diagnosis and treatment scenario and realize repeated training of clinical skills.

Second, strengthen the construction of clinical teaching bases. In cooperation with tertiary hospitals and specialized hospitals, establish a stable clinical teaching base to provide students with rich clinical practice opportunities; at the same time, establish difficult case discussion centers and skill training centers in teaching bases to provide students with a good practical teaching environment, and encourage students to participate in teachers' clinical research projects and integrate scientific research thinking into the clinical teaching process.

5. Conclusion and prospects

Job competence is the core goal of modern clinical medicine personnel training, and is also the key to improving the quality of clinical teaching in neurology. At present, there are some problems in neurology

clinical teaching, such as vague teaching objectives, single teaching methods, and imperfect evaluation systems, which are difficult to meet the needs of job competence training. By reconstructing teaching objectives, innovating teaching methods, perfecting evaluation systems, strengthening the construction of teachers, and integrating teaching resources, this paper can effectively improve the professional knowledge, practical skills, competence, and professional literacy of medical students. In the future, it is necessary to further deepen teaching reform, promote the normalization of clinical teaching mode oriented by job competence, and provide solid talent guarantee for the construction of a healthy China.

Funding

Natural Science Basic Research Program of Shaanxi Province (No.2021JM-554); Shaanxi Provincial People's Hospital Science and Technology Development Incubation Fund Project (No.2021YJY-22)

Disclosure statement

The authors declare no conflict of interest.

References

[1] Lv J, Xie Y, Wang J, et al., 2022, Application of Flipped Classroom Model Based on Post Competence in the Teaching of "Emergency and Disaster Medicine." Anhui Medicine, 26(10): 2117–2120.

[2] McClelland D, 1973, Testing for Rather Than Competence for Intelligence. American Psychologist, 28(1): 1–14.

[3] Liu D, Zhang S, Chen S, et al., 2023, Teacher Education Model Exploration of Master Degree in TCM Based on Post Competence. Contemporary Chinese Medicine, 30 (22): 155–159.

[4] Chinese Alliance of Elite Teaching Hospitals for Resident Training, 2022, Consensus on Core Competence Framework of Residents in Chinese Alliance of Elite Teaching Hospitals for Resident Training. Concord Medical Journal, 13(1): 17–23.

[5] Hang J, Wang J, Zhou X, et al., 2025, Application of Hybrid Teaching Model Based on Post Competence in Standardized Training of Neurology Residents. Heilongjiang Medicine, 38(05): 1060–1063.

[6] Miya E, Bernson-Leung, David K, et al., 2018, The Child Neurotrainee-as-Teacher: A Clinical Teaching Curriculum Tailored to Learners' Needs and Developmental Roles. Pediatric Neurology, 78: 41–45.

[7] Lin C, Cai Y, Hu Y, et al., 2022, Increasing the Application of Teaching Models of "Class with Problems" and "Role-Play Between Doctors and Patients" in Clinical Teaching of Neurology. Contemporary Medicine, 28(19): 183–185.

[8] Cheng C, Zuo X, Zheng J, et al., 2021, Construction and Practice of Formative Assessment and Evaluation System for Neurology Courses. Medical Education Research and Practice, 29(03): 461–464.

[9] Zhou L, Tan Y, Han F, et al., 2024, Construction and Exploration of Competency-Oriented Neurology Resident Training System. Concord Medical Journal, 15(04): 973–980.

[10] Qin C, Zhang S, Shang K, et al., 2020, Application of Clinical Case-Oriented Multidisciplinary Integration Teaching Method in Clinical Practice Teaching of Neurology Department in a Large General Tertiary Care Hospital in Wuhan. Medicine and Society, 33(09): 130–133 + 135.

[11] Chen L, Fan D, 2022, Application of Multimedia Courseware Combined with Network Teaching in Standardized

Training of Neurology Residents. Chinese Journal of Medical Education Exploration, 21(1): 63–66.

[12] Yin Z, 2024, Application of PBL Combined with CBL Teaching Model in Clinical Teaching of Neurology. China Health Industry, 21(21): 169–171 + 179.

[13] Wang L, Geng D, 2024, Situational Simulation Teaching Based on PBL Combined with CBL in Neurology Apprentices. Chinese Medical Records, 25(4): 94–96.

[14] Tao Q, Zhang Y, Yu H, 2022, Situational Simulation Teaching Method in Clinical Apprenticeship Practice Teaching in Neurology. Continuing Medical Education, 36(8): 32–35.

[15] Zhang Q, Tang X, Zhang L, et al., 2023, Application of MDT Combined with LBL-PBL-CBL Teaching Method in Standardized Training of Neurology Residents. China Continuing Medical Education, 15(18): 93–97.

[16] Zhou P, 2025, Application Effect of Microclassroom Combined with CBL Mixed Teaching Model in Neurology Clinical Teaching. China Health Industry, 22(15): 169–172.