Research on Innovative Practice Teaching Models for Higher Nursing in the Context of "Internet + Smart Health and Wellness"

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Abstract: With the acceleration of population aging in China and the in-depth implementation of the "Healthy China" national strategy, "Internet + Smart Health and Wellness" has become a major way to meet the increasing demand for health and wellness services. This has led to new demands for the digital literacy of health and wellness service personnel, the application of intelligent equipment, and the actual development of interdisciplinary integration. However, the existing higher nursing practice courses are not closely connected with the intelligent health scenario, and the integration of industry and education is not deep enough to meet the urgent need for high-quality nursing talents in the new era's health service industry. The new form of productive forces, characterized mainly by digital technology and artificial intelligence, has provided a new impetus for the high-quality development of nursing education in China. This paper analyzes and discusses the innovative practice teaching models for higher nursing in the context of "Internet + Smart Health and Wellness."

Keywords: Internet + Smart Health and Wellness; Higher Nursing; Practice Teaching; Models

Introduction:

In the "Smart Health and Wellness" scenario, new types of services such as "remote health monitoring," "intelligent nursing equipment," and "digital health management" have high demands for the accuracy of nursing staff's technical operations, digital thinking, and cross-platform collaboration. However, in the existing higher nursing practice courses, the training scenarios are disconnected from real medical scenarios, there is a lack of digital practice resources, and the integration of "teaching-learning-doing" is insufficient, which cannot meet the needs of the nursing profession that combines "technology-humanity-service." Therefore, considering that clinical teaching in colleges and universities has occupational orientation, clinical relevance, and dynamic adaptability, it is necessary for colleges and universities to actively respond to the technological changes in the intelligent health industry, introduce digital elements into teaching content, teaching methods, and evaluation systems, and thus cultivate "smart" nurses with both professional quality and creativity.

1. The Necessity of Innovation in Higher Nursing Practice Teaching from the Perspective of New Forms of Productivity

Driven by new forms of productivity, the health care industry is undergoing a profound transformation empowered by technology and reshaped in its approach. In recent years, with the continuous integration of artificial intelligence and health care, application scenarios have become increasingly diverse. AI-assisted diagnostic systems based on deep learning have been able to accurately analyze medical images (such as CT, MRI) and have an accuracy rate of over 90% in distinguishing between benign and malignant lung cancer and in the pathological typing of breast cancer. Multicenter studies have confirmed that their application value has reached the level of senior radiologists. However, the traditional nursing education model cannot meet the

needs of new social development. It currently focuses mainly on standardized patients (SP) and static scenario simulation, which makes it difficult to reproduce actual problems such as multi-device linkage and multi-modal data monitoring. When facing actual problems such as ECMO equipment alarm disposal and drug dosage exchange of intelligent infusion pumps, students experience decision-making delays. Clinical internship tracking shows that under the traditional training model, the equipment emergency handling ability of student nurses only reaches a standard rate of 62%. In response to the "technical generation gap" in the practice of intelligent medical equipment, especially for the emerging disciplines of "intelligent nursing robot operations" and "smart ward Internet of Things system," the teaching content is still limited to basic equipment operations. There is a lack of in-depth research on data communication standards between instruments (HL7 FHIR) and fault code analysis, which leads to difficulties for student nurses in efficiently intervening in problems such as AI-guided system path optimization and intelligent matching of rehabilitation assistance systems in clinical practice. The fundamental reason is that there is a serious lack of coordination between the providers and demanders of nursing education in multiple aspects such as technical literacy, scene adaptability, and collaboration ability of nurses. It is urgent to reshape the teaching model to solve the coupling relationship between supply and demand [1].

2. Innovative Practice Teaching Models for Higher Nursing in the Context of Internet + Smart Health and Wellness

2.1 Reconstruction of Course Structure Based on the OBE-CDIO Dual-Chain Training System

In the context of "Internet + Smart Health," the OBE (Outcomes-Based Education) and CDIO (Conceive, Design, Implement, Operate) dual-loop talent training model highlights the guidance of students' final learning outcomes and emphasizes students' participation in the entire process of practical operations. Based on in-depth research on health and wellness theories, new theories and methods such as intelligent health monitoring, remote nursing intervention, and health informatization have been introduced to build a complete nursing discipline system. This has broken through the traditional professional boundaries, integrated knowledge modules from multiple fields, and established an interdisciplinary integrated curriculum cluster. Students can gradually learn the whole process from the conception of theoretical knowledge to the design, implementation, and evaluation of nursing plans, laying a good foundation for their future career in smart health and wellness nursing.

For example, in the "Hypertension Chronic Disease Smart Management Internship," students are guided by teachers to use smart blood pressure monitors to collect patients' daily blood pressure data and upload the data to the cloud platform in real-time through a mobile phone app. The data is then organized through data analysis technology. During the design process, students can communicate with patients through online platforms and, in combination with patients' living habits and medication conditions, develop a comprehensive nursing plan that includes diet, exercise, and medication reminders. In the implementation stage, students assist patients in implementing the care plan through online communication and conduct regular follow-ups and revisions to achieve the dual-mode talent training goal of "OBE + CDIO."

2.2 Construction of a Tripartite Training System Integrating Hospitals, Enterprises, and Universities

The "tripartite cooperation" education model refers to the integration of the advantages and strengths of hospitals, enterprises, and universities to promote the development of nursing professional education. Centered on research cooperation among hospitals, enterprises, and universities, with hospitals as the base, medical internships and case studies as the main focus, and enterprises as the support, advanced smart health and wellness equipment and information management systems are introduced. Universities are responsible for providing professional theoretical support and talent training. Establishing cooperative laboratories to promote in-depth integration of industry, academia, and research, and through cooperation with enterprises, hospitals, and other units, new technologies and equipment suitable for intelligent health and wellness are developed to meet the needs of the smart health and wellness industry for compound nurses [2].

For example, in conducting community health big data research, enterprises provide students with a set of specialized data acquisition devices and data analysis software. Medical workers from hospitals help students understand the actual meaning of medical data, while teachers guide students in using knowledge of statistics and data mining to analyze the data. Students need to combine residents' lifestyle and disease history and other related information to conduct a basic health status survey of residents. Through methods such as cluster analysis and association rule mining, the health status of community populations is analyzed to identify the main influencing factors. For example, a survey of the elderly in a certain area shows that a high-salt diet and lack of exercise are highly correlated with increased blood pressure. Based on this, individualized health interventions for community residents are carried out through activities such as holding health lectures and organizing community fitness exercises.

2.3 Establishment of a Practice Teaching Quality Evaluation System Guided by Artificial Intelligence Technology

Using artificial intelligence technology, a comprehensive and precise evaluation of the entire process and effectiveness of advanced nursing internships is realized. Natural language processing technology, image recognition technology, and machine learning technology are used to automatically collect multi-source information such as nursing operation videos, internship report texts, and online learning behaviors during clinical internships. Based on the establishment of an evaluation indicator system, machine learning algorithms are used to conduct in-depth analysis of the collected data and quantitatively evaluate performance from multiple aspects such as knowledge mastery, technical operation, professional quality, and innovation ability. Compared with conventional evaluation methods, this project can automate, real-time, and objectify the evaluation process, detect problems in the teaching process in a timely manner, and help teachers adjust teaching strategies and optimize teaching content [3].

For example, in the nursing practice process, an evaluation system for practice teaching quality guided by artificial intelligence technology is established. It is found that the system can obtain students' nursing operation videos through cameras set up in the wards and assess the standardization of students' operations using image recognition methods, such as the accuracy of steps in intravenous puncture, wound dressing change operations, and the implementation status of sterile operations. Then, using machine learning and other methods, a mathematical model for evaluating students' actual application level is established, and personalized evaluations are conducted for each student. By studying the problems in the clinical practice teaching process and combining data results, teachers will provide targeted guidance and increase skill training and case studies [4].

Conclusion

In the context of "Internet + Smart Health and Wellness," the establishment of the "OBE-CDIO" dual-training system, the "tripartite collaborative training model," and the feedback system of the "technology support platform" promotes comprehensive innovation in nursing professional practice teaching from curriculum settings to teaching models to evaluation systems. Through the above innovative teaching methods, the overall quality and employment competitiveness of nursing graduates are improved, which can better serve the "Healthy China" national strategy.

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