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Exploration on the Development Trend of Nursing Industry from the Perspective of Big Data

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Abstract:

With the rapid development of modern information technology and intelligent terminal technology, big data has become a great help for people to find laws, solve problems and accurately study and judge. All walks of life, including the hospital nursing management industry, are increasingly looking at and relying on big data. Using Internet information technology and medical big data information of inpatients in affiliated hospitals, this paper designs and develops a nursing clinical thinking training platform with common clinical symptoms as the main line, including symptom nursing theoretical knowledge module, clinical case analysis module and assessment and evaluation module. This paper applies medical data to nursing education and excavates the teaching value of medical big data, providing a new way for training the clinical thinking of nursing under the background of Internet plus. This study shows that hospital nursing management should keep up with the development of the times and make full use of the potential of big data. Only in this way can we continuously improve the level of hospital nursing and bring the best quality nursing service to more patients.

Keywords: *Big Data, Nursing Service, Medical Data Fusion, Nursing Service Platform.*

I. INTRODUCTION

The modern bio psycho social medical model has had a great impact on nursing work, making the nursing work model change from disease-centered to human health-centered holistic nursing model. The transformation of nursing work mode requires nurses to have the ability of independent thinking, judgment and decision-making in clinical work. Therefore, scientific and rigorous clinical thinking is particularly critical. Nursing clinical thinking refers to the use of theory, intelligence and experience to comprehensively analyze, judge and implement nursing measures for patients' existing or potential nursing problems. It is the necessary premise and basis for overall nursing according to nursing procedures. It is one of the main core competencies of nurses [1-2].

Foreign scholars [3] believe that novice nurses or newly graduated nursing students are difficult to make appropriate nursing decisions in an extremely complex and fast-paced medical environment. Under the limited time and budget, it is necessary to strengthen the cultivation of clinical thinking of new

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registered nurses. Domestic Tang Zhiming [4] and others conducted a post survey on nurses in more than 30 general hospitals above level II in Guangdong, Guangxi and Hainan. It was found that 80% of clinical nurses had nursing clinical thinking defects, which were mainly manifested as follows: first, they lacked rational thinking of questioning and verification in the process of executing medical orders, mechanically executed medical orders, and lost the important role of nursing control; Second, the ability to accurately identify the changes of patients' condition and make independent judgment, analysis, decision-making and execution is not enough; Third, there are problems of formalization and emptiness in the content of health education for patients. According to the investigation on the core competence of new nurses by ouaijun [5], the score of nursing clinical thinking ability is the lowest. Therefore, strengthening the cultivation of nurses' clinical thinking is of great significance to improve the quality of clinical nursing service.

The cultivation of clinical thinking has always been an important and difficult topic in medical education [6]. Clinical thinking can not be completed in one training, but should be gradually established in the dynamic process of repeated observation, thinking and verification for a long time [7-8]. The whole learning process from establishing awareness, mastering methods to finally having ability needs to be explored and understood, which is a great challenge for students and teachers. Compared with the rapid development of clinical medicine, there are still many problems and defects in the theoretical and practical research of nursing. In recent years, nursing educators continue to carry out teaching reform, cultivate students' nursing clinical thinking by optimizing the curriculum and reforming the traditional teaching methods, cultivate more excellent nurses for the clinical front line, and meet the needs of nursing talents in the modern medical environment. Due to the strong applicability and practicality of nursing discipline, nursing teaching must be close to clinic and practice, so that students can understand the occurrence and development process of diseases, experience the thinking mode in clinical treatment, promote deeper thinking on the basis of obtaining perceptual cognition, and learn to transform theoretical knowledge into practical work ability.

II. DESIGN AND DEVELOPMENT OF NURSING PLATFORM

2.1 Basic Concept

Scholars at home and abroad have given different meanings to clinical thinking in different periods, which can be said to be a gradual development process. The earliest understanding of clinical thinking by domestic scholars is diagnostic thinking, which is a logical reasoning method in the process of doctors' understanding and judging diseases. Zhang Xide [9] added the meaning of clinical thinking as: the process of applying medical knowledge to carry out logical reasoning and comprehensive analysis on clinical data, find out the main contradictions, analyze and obtain the methods to solve problems, which is the summary of clinicians' experience in clinical work for a long time. In recent years, Zeng Yong [10] put forward a more comprehensive meaning. He believes that clinical thinking should not be limited to the diagnosis and treatment of diseases, but should be patient-centered, flexibly use the knowledge of medical science, natural science, humanities and social science, behavioral science and other aspects, through communication and exchange with patients and laboratory auxiliary examination results, With the help of all available evidence and clues, and fully combined with the patient's social and cultural background, carry

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out critical analysis, analogy, judgment, synthesis and differential diagnosis, finally form an individualized treatment scheme for diagnosis, treatment, rehabilitation and prevention, and correctly implement the scheme and constantly revise the thinking activity process. At present, domestic nursing scholars have different understanding of "nursing clinical thinking", and there is no unified concept.

Huang Jing [11] et al. Proposed that nursing clinical thinking refers to the comprehensive analysis, judgment and implementation of nursing measures for patients' existing or potential nursing problems by using theory, intelligence and experience, which is the necessary premise and foundation for overall nursing. Lv Yiting [12] believes that the meaning of nursing clinical thinking refers to the thinking activities of nurses in the process of evaluation, diagnosis, nursing and prevention of patients' health status in clinical nursing work. Song Junyan [13] through a large number of literature research and theoretical analysis, came to the conclusion that clinical thinking includes three aspects of thinking, namely critical thinking, systematic thinking and evidence-based thinking. At present, nursing academia more agree with Huang Jing's theoretical point of view.

The Research Report of Ali Research Institute defines Internet plus as a set of Internet based information technology (including mobile Internet, big data technology, cloud computing, etc.) in the economic and social sectors of the Department of proliferation and application process. "The Internet plus" is a deep integration of the Internet's innovative research results with all sectors of the economy and society, with the aim of promoting technological progress, organizational change and efficiency improvement, and enhancing the innovation and productivity of the real economy, and to form a broader, Internet plus, "the Internet plus" issued by the State Council, in the guidance of the State Council's document on the promotion of "Internet +" action. A new form of economic and social development with Internet as infrastructure and innovation elements. With the development of "Internet plus", all walks of life are gradually digitalized and digitalized. We have entered the era of big data. Medical big data refers to the total data generated by patients in the process of diagnosis and treatment. These data include patients' electronic medical records, basic information, diagnosis and treatment data, medical image data, medical management data, economic data, medical equipment and instrument data during their activities in the hospital. The main sources are clinical trial data, biopharmaceuticals, electronic medical records, diagnosis books and individual health information. It has the characteristics of polymorphism, timeliness, privacy, incompleteness and redundancy.

2.2 Platform Construction

At present, there are mainly two construction modes of professional courses at home and abroad, one is the vertical mode with discipline as the center, and the other is the horizontal mode with problem as the center. The curriculum of most nursing colleges in China adopts the subject centered vertical model. The curriculum contents are independent of each other, and the knowledge structure presents the characteristics of fragment and module, which is lack of organic integration and mutual penetration. Students are often used to solving problems through one-way thinking. In the actual clinical work, nurses need to first observe the symptoms or signs of patients, and then analyze, judge and deal with them. It is reverse thinking and reasoning. Therefore, facing the clinical problems of patients, especially when the condition changes suddenly, nursing students or new nurses often feel at a loss and have weak comprehensive thinking ability to deal with clinical problems. Symptoms are an important indication to reflect the condition of the patient.

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Clinical nurses are the front sentry to master the symptoms and signs of the patient at the first time. Timely and accurate identification of patient symptoms is helpful to correct clinical decision-making. Therefore, on the basis of systematic learning of disease knowledge, taking the nursing of common clinical symptoms as the main line, we try to comprehensively analyze the whole treatment and nursing process of patients from admission to discharge, guide students to sort out the core curriculum knowledge of nursing horizontally, and gradually establish a scientific clinical thinking method of nursing.

Clinical thinking is not completed at one time, but is based on the dynamic process of repeated observation, thinking and verification. The whole learning process from establishing awareness to mastering methods and finally having ability needs to be explored and understood, which is a great challenge for students and teachers. Good nursing clinical thinking is closely related to three factors, namely systematic theoretical knowledge, scientific thinking methods and continuous practical exercise. The three complement each other and are indispensable. The training system includes three modules: symptom nursing theory learning, clinical case analysis and assessment and evaluation, which respectively correspond to the three important factors of nursing clinical thinking. Through the study of symptom nursing theory, help students master systematic theoretical knowledge, promote students to establish scientific thinking methods through clinical case analysis and reading, and then complete continuous practical exercise with the relevant questions of the assessment and evaluation module. The contents of each part are cross integrated and based on each other to cultivate students' nursing clinical thinking in an all-round way.

III. PLATFORM CONSTRUCTION

The networked teaching system adopts B / S structure (as shown in Figure 1). The system adopts c# programming language, uses MVC framework, constructs web applications hierarchically, takes hospital information system (his) as the supporting platform, uses SQL Server + Mongo DB hybrid storage, and uses HTML5 + CSS3 + JS web page technology, The server adopts Windows Server 2008 R2 operating system, and the client supports ie, Google Chrome and Firefox. Authorized teachers / experts and students can access the system, which has good ease of use and stability.

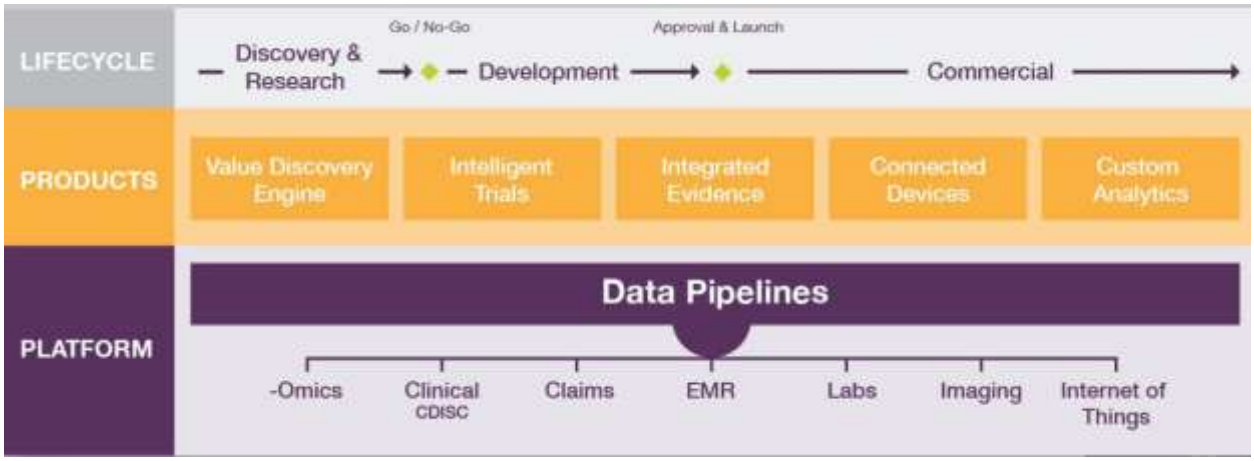

Fig 1: B/S structure

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The data comes from the real clinical medical big data of the hospital. The hospital system is complete and the types of diseases are complete. It has a massive medical data foundation, including the electronic medical record data generated by patients in the process of clinical diagnosis and treatment, such as patient basic information data, diagnosis and treatment data, nursing records, clinical examination data, medical image data, etc. In the previous research, the cooperative information technology company of the research project transferred the medical record data in the hospital his system into the teaching case system through data docking and storage technology. At present, 1856 clinical real medical records have been imported, and the corresponding data processing has been carried out. They are presented in the system according to the time sequence of admission, treatment, nursing, rehabilitation and discharge, which meets the case data needs of this study. Considering privacy and ethical issues, we protect the identity information of patients and medical staff. The clinical cases are preliminarily numbered according to the international statistical classification of diseases and related health problems ICD-10, and the keywords are set according to the name of the patient's main complaint symptoms. There are three ways of case retrieval in the platform: ICD-10, symptom name and keyword.

Different scholars emphasized the importance of optimizing the user experience of the network platform in the quality improvement system of network education. From architecture to style, from technology to art, they should conduct full demonstration and research, pay attention to the visual experience of the platform, have friendly interface and strong affinity, meet the higher-level psychological needs of teachers and students, and then get close to the website and accept information. Improving user experience is not only a technology, but also an art. The color, drawing and layout of the interface need to be carefully designed. Appropriate color matching can not only attract users' attention, but also play a certain role in reducing learners' visual fatigue. The system selects the cool color of health, safety and tranquility light green as the main color of the system, giving people a sense of rationality and peace. White and gray are selected as auxiliary colors to set off the main text, strengthen color contrast, and create a clear, calm and bright visual effect for teachers and students. A reasonable interface layout is to present text, audio, video, pictures and other media information to users gracefully and intuitively on the interface in the most appropriate way. The system adopts a "T-shaped" structure layout, and the top of the interface adopts a horizontal layout. Below it, the left side is the main menu of the system content, and the right side presents the corresponding learning content. Different buttons are set respectively. The user can open or close them in turn according to the needs, so as to ensure the simplicity and ease of operation of the overall style of the system. The system theme interface design is shown in Figure 2.

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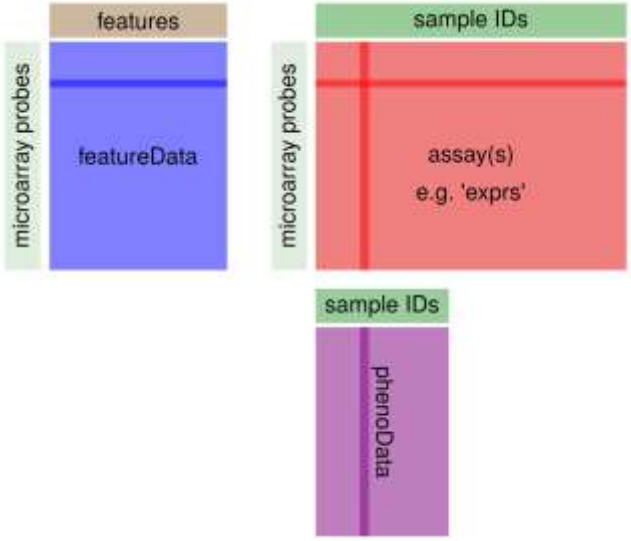

Fig 2: The system theme interface design

Students can log in to the system through an authorized account and click to enter the theoretical knowledge learning module to comprehensively and systematically learn the theoretical knowledge of symptom nursing. After clicking to enter the case analysis interface, the left vertical menu is the patient's hospitalization time and navigation button, including medical record information, doctor's order, nursing, auxiliary examination and daily comment; The right area is the details of case data corresponding to the navigation button,.

The system fully integrates Internet technology, medical data processing technology and educational information technology, and takes the lead in exploring the application of Internet plus medical big data in nursing teaching in China. It provides a new way for the application of medical data in nursing teaching. Relying on the massive medical information generated by hospital inpatients, the system is transformed into teaching resources at the first time through big data processing technology. It has rich, vivid, cutting-edge and real characteristics, and provides new resources for nursing education in the era of big data. The system takes symptom nursing as the main line, nursing procedures as the framework, builds a learning platform, adheres to the requirements of clinical nursing posts, and highlights the characteristics of nursing specialty. The ubiquitous network learning is realized through Internet technology, which provides a new model for the cultivation of nursing clinical thinking.

IV. CONCLUSION

This study takes the medical information of hospital inpatients as the data support, takes clinical symptoms as the main line, organically combines Internet information technology with medical big data technology, and designs and develops a nursing clinical thinking training platform. The platform follows the law of clinical thinking training, covering systematic theoretical knowledge of symptom nursing, rich and vivid clinical real cases and examination questions. Students can carry out clinical thinking training through three links: theoretical learning, practical analysis and feedback evaluation. The platform reflects the teaching value of clinical cases, effectively shortens the distance between "classroom" and "clinical",

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and plays an important role in the cultivation of students' nursing clinical thinking. The platform has the characteristics of close clinical, open sharing and convenient access, and is suitable for popularization and application.

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