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Research Status and Prospect of Patient Journey Map Application in Medical Education

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Abstract: *Patient Journey Map (PJM), as a systematic visualization tool, can be used to present the key stages, experiences, and needs of patients within the healthcare process, and its value in medical education has become increasingly prominent. Drawing upon a review of the relevant literature, the current status of research on PJM in medical education is examined from the perspectives of conceptual evolution, methodological development, teaching application scenarios, evaluation of application effects, and future challenges, to provide both a theoretical foundation and practical reference for optimizing medical teaching models and further advancing the concept of patient-centered education.*

Keywords: *Patient Journey Map, Medical Education, User Experience, Literature Review*

1. Introduction

Within the framework of the "three-round education" concept (Opinions on Strengthening and Improving Ideological and Political Work in Colleges and Universities under New Circumstances, Central Committee of the Communist Party of China and the State Council)[1], which emphasizes ideological and value-oriented leadership throughout the entire educational process, the rapid advancement of science and technology has afforded greater opportunities for the innovation of medical education teaching models. Through the integration of patient experience data and clinical practice needs, a deeper understanding of the core aspects of diagnosis and treatment, as well as the patient's perspective, can be fostered among medical students, thereby promoting the cultivation of empathy and clinical decision-making skills. In this paper, the current status of research on the application of patient journey maps in medical education is systematically reviewed, their value and existing challenges are analyzed, and potential directions for future development are explored, with the aim of providing a reference for advancing the reform of medical education.

2. Definition and conceptual evolution of the patient journey map

2.1 Definition of Patient Journey Map

The Journey Map, which originated in the field of industrial design, is commonly utilized as a user experience visualization and analysis tool for describing and analyzing the user's experience process within a specific context. With the shift in the healthcare delivery model toward Patient-Centered Care (PCC), the Journey Map has also been adopted as a design methodology tool to describe and analyze the patient experience within specific healthcare contexts.

The Patient Journey Map is utilized to break down the patient journey into distinct stages and touchpoints, thereby enabling researchers, designers, and decision makers to gain a better understanding of users' needs, pain points, and behavioral patterns. By systematically integrating the consumer journey analysis framework from the sales industry with the unique characteristics of healthcare services, the Patient Journey Map has gradually evolved into a visual analysis tool that incorporates the concept of humanistic care in medicine[2].

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2.2 Conceptual Evolution of Patient Journey Maps

A unanimous definition of the patient journey map has not yet been established. Bake[3] and other scholars were among the first to define it as "an analytical tool that systematically depicts, in a visual manner, the entire process of the patient's experience and diagnostic and treatment procedures from the early stage of the disease." Simonse's team[4] emphasizes the patient's subjective perspective, defining it as "an analytical tool based on the patient-centered approach." Additionally, Simonse's team[4] further extends the concept by defining it as "a tool that presents patients' subjective feelings and evaluations at healthcare service touchpoints through visualization based on the concept of patient-centrism." Sijim-Eeken[5] further develops the concept by proposing that the tool should constitute a comprehensive analytical framework that includes the temporal dimension, multidimensional experience elements, and doctor-patient interactions. Specifically, the tool should establish a structured analytical framework that incorporates the temporal dimension, multidimensional experience elements, and doctor-patient interactions, thus achieving a comprehensive view by integrating the timeline of consultation and treatment, patients' physiological and psychosocial experience data, and the dynamic interactions between doctors and patients during the medical process. It should be noted that the focus of the term "journey" varies slightly across cultural contexts: in English, the emphasis is on "journey/process," whereas in Chinese, the focus is more on "experience/process." Nevertheless, the core remains a systematic depiction of the entire patient experience.

The Patient Journey Map visualizes patient interactions, feelings, and needs at each stage of care through diagrams and tables, thus revealing key points for improving the patient experience. The Patient Journey Map is regarded as an analytical tool focused on patient experience, systematically recording key touchpoints and service elements throughout the entire care cycle, thereby forming a visual diagram or narrative map. The tool is designed to capture the entire process trajectory of patients and their caregivers within the healthcare service system (including access, guidance, experience, and exit) and is used to conduct in-depth analysis of barriers, facilitators, and final experience outcomes during service interactions, thereby providing an evidence-based foundation for optimizing service processes, improving patient-provider communication, and enhancing the overall quality of healthcare services[2].

3. Methodological System Construction of the Patient Journey Map

In studies aimed at improving healthcare service quality, the patient journey map has emerged as a novel service design tool, however, its construction methodology remains under development. Most research utilizes data collection and analysis techniques commonly employed in qualitative research, such as observation, interviews, and thematic analysis, to construct and depict the patient journey map [6]. Existing studies have indicated that the construction of this tool requires the integration of data derived from both qualitative and quantitative research. Multidimensional methods, including time-series analysis, scenario transition observation, core issue identification, emotion curve tracking, and social network analysis, are often incorporated to systematically identify key issues at healthcare touchpoints[7]. Typically, patient information is collected from case systems, and a timeline is constructed after group discussion. The nodes are categorized according to disease progression and are divided into the diagnosis period, the decision-making period, and the post-decision period, following chronological order along the longitudinal axis of the patient journey map. Based on participant observation, the horizontal axis of the patient journey map typically includes the dimensions of Actions, Touchpoints, Thoughts, Emotions, and Pain Points[8]. In particular, cross-analysis of emotion profiles and social interaction mapping using patient journey maps can effectively reveal potential pain points that are often overlooked in traditional service models.

Currently, the visual presentation of patient journey maps is characterized by the following features: flowcharts are used to emphasize process logic, timelines illustrate event sequentiality, line graphs depict emotional fluctuations, and hybrid forms enable panoramic representation through the integration of multimodal data. Comparative studies have indicated that hybrid representation is considered more advantageous, as it allows for the simultaneous visualization of processes, quantitative analysis of emotions, and tracking of interactions[7]. However, a unified and standardized methodological framework for the construction of patient journey maps has not yet been established. Furthermore, the validity of data collection (e.g., recall bias), the depth of analysis, and the forms of visualization require further verification through empirical studies.

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4. Application of Patient Journey Maps in Teaching and Learning

4.1 Development of a nurse-patient communication corpus

Nightingale, the founder of nursing, emphasized the interrelationship between people and their environment, as well as the importance of keen observation, appropriate communication skills, and accurate documentation[9]. American nursing education identifies communication skills as one of the four core competencies[10]. Using the patient journey map as a framework and adopting the patient's perspective, Xiaoyun Chen[11] systematically compiled a standardized nurse-patient communication corpus covering common scenarios in emergency, outpatient, and inpatient departments through literature review and expert consultation. The corpus has been refined into specific content panels, and context-based guidance on standardized nursing terminology is provided. The corpus encompasses three common communication scenarios for nurses in emergency, outpatient, and inpatient departments. Each scenario is divided into one or more content blocks, and the corresponding corpus content is provided based on specific communication contexts, with standardized nursing terms incorporated accordingly. Yu Baolian's study[12] has demonstrated that the use of such standardized communication phrases, tailored to specific situations, can alleviate the tension and discomfort experienced by new nurses and nursing interns during clinical communication, enhance the effectiveness and professionalism of interactions, and provide a scientific and instructive resource for developing verbal communication skills. However, the corpus remains at the stage of theoretical construction, and its practical effectiveness and long-term impact on improving nursing students' communication abilities must still be empirically evaluated through teaching practice. Future research should explore the integration of the corpus into simulation-based teaching or clinical practice to verify its effectiveness and applicability.

4.2 Cultivation of Systemic Thinking and Empathic Ability

Patient journey maps were innovatively applied to teaching by Park et al.[13], who constructed a virtual portrait of a diabetic patient, 'Ms. Diaz's detailed information, such as demographic characteristics, lifestyle habits, and social background, will be used to simulate her complete journey from symptom recognition to long-term health management. During the teaching process, students were instructed to create a visual journey map incorporating emotional profiles and key touchpoints. This approach enabled the identification of psychological distress, financial burden, social role conflict, and other multidimensional challenges that patients may encounter throughout the treatment process.

The spatial and temporal dimensions of patient journey maps were intentionally designed to encourage students to move beyond a single-disease perspective and to adopt a holistic approach to health management. When combined with user profiling, the tool is able to precisely identify individual patient needs and provide decision support for hierarchical diagnosis and treatment, continuity of care, and other clinical scenarios [14]. By utilizing patient journey maps, medical students can obtain a comprehensive understanding of the patient experience throughout the healthcare process. This study provides an innovative paradigm for medical humanities education. In the future, clinical simulation within teaching can be further enhanced by involving real patients in the construction of virtual portraits and by developing a composite case base that integrates multiple diseases. However, it should be noted that the current teaching approach, which relies on virtual images, remains limited in terms of authenticity and complexity, primarily due to the absence of immediate feedback from real patients. Additionally, most existing applications focus on single-disease instruction, which does not fully reflect the complexity of clinical practice, where patients frequently present with multiple comorbidities. Future research should focus on developing more complex simulation cases that incorporate multiple diseases and integrate real patient feedback loops.

4.3 Patient journey maps for interdisciplinary collaboration

Currently, most medical or health professional schools incorporate systems-based practice teaching objectives and cover health systems science topics such as population medicine, medical informatics, and quality improvement[15]. The development of effective patient journey mapping teaching platforms or curricula requires not only the participation of medical educators with extensive clinical and teaching experience, but also the establishment of interdisciplinary collaborations among professionals in service design, information technology, and visual communication to jointly address technical implementations and curriculum design. Opportunities for medical students to utilize tools such as patient journey maps to conduct systematic patient experience research during their academic years, or to participate in

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interprofessional teams to design and optimize healthcare processes, are currently limited[16]. At present, the construction and application of patient journey maps in China have predominantly remained at the stages of mapping and qualitative analysis, with relatively few practical cases demonstrating their deep integration with information technology. It is therefore recommended that future efforts explore the integration of electronic health records (EHRs) and patient-reported outcomes systems (ePROs). Patient-reported outcomes enable patients to self-report their in-hospital and out-of-hospital health status and experiences through mobile devices, with the resulting data then synthesized and analyzed by healthcare professionals using a management platform[17]. The integration of patient self-reported data into patient journey maps can support the construction of dynamic, real-time patient journeys and serve as a valuable teaching resource for medical students to understand the continuum of patient experience as well as out-of-hospital management challenges.

4.4 Differences in the application of patient journey maps at home and abroad

Currently, patient journey map research is advancing rapidly abroad, whereas domestic research remains in the preliminary developmental stage[7]. Domestic research on patient journey maps primarily focuses on patient management, chronic disease care, optimization of the medical experience, health management, and treatment decision support, with most studies concentrating on specific disease scenarios. The predominant research methodology is qualitative, typically involving in-depth interviews with patients diagnosed with target diseases and employing content analysis to construct patient journey maps. The visual representation of qualitative research findings largely remains at the stage of policy recommendation. A study by Li Xue et al.[8] revealed that the treatment decision-making journey of patients with metastatic spinal tumors is complex, with consultation choices, treatment decisions, and symptom management needs being prominently highlighted. Accordingly, the standardization of online health information and the development of a medical evaluation platform are recommended to support the construction of a nurse-led, family-participatory, online mutual-support treatment decision aid for symptom management, thereby addressing the health needs of patients during the peri-therapeutic decision-making period. Fan Ruixue et al.[18], through interviews with patients and their families, identified current patient needs and suggested that government efforts should focus on drug protection, the introduction of patient education guidelines, and the popularization of scientific knowledge regarding major diseases. It is further recommended that hospitals improve both the quality and efficiency of pathological diagnoses, increase access to daytime chemotherapy facilities, implement intelligent bed reservation systems, and actively disseminate the latest research findings related to major diseases.

In foreign countries, the application of patient journey maps tends to focus on practical tool implementation, with research outcomes directly applied to patient care. A patient journey map was constructed by Mathura et al.[19] using feedback from 125 rheumatology patients regarding clinical practice. The outpatient service process was subsequently optimized based on this feedback, resulting in a reduction of consultation time for new patients by 10 minutes and follow-up time by 5 minutes. Wauben et al.[20] utilized RFID technology within the patient journey map framework to track patient flow, thereby reducing waiting times and increasing patient satisfaction with staff. The practical implementation of patient journey map research findings remains an important area for future exploration.

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5. Future developments and challenges

5.1 Insufficient patient involvement

Currently, the application of patient journey maps in medical education primarily relies on predefined frameworks established by researchers, with patients remaining in a passive role during the decision-making stage[21]. In the future, continuous efforts should be made to enhance patient participation and to further utilize patient-reported data for the analysis of patients' experiences and needs. By doing so, a

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more comprehensive understanding of patients' treatment journeys can be achieved, thereby enabling the provision of more accurate and personalized healthcare services[15], as well as more relevant and tailored teaching cases for medical education.

5.2 Disease-specific limitations and differences in technology acceptance

Currently, patient journey maps have primarily focused on specific diseases and have not yet been able to capture patient journeys involving comorbidities[22]. Given the complexity of clinical practice, where patients frequently present with multiple comorbidities, a gap remains between these realities and current patient journey mapping approaches. Moreover, patients with different diseases exhibit varying levels of perception, acceptance, and utilization of digital technologies in the context of patient journey maps. Future research on patient journey maps should aim to develop complex simulation cases that incorporate multiple comorbidities and include patient feedback loops.

5.3 Methodological standardisation and the need for localisation

The methodology for constructing patient journey maps remains controversial, as there is a lack of uniform and standardized reporting standards[1]. In addition, qualitative interviews that rely on patient recall are susceptible to recall bias[23]. Patient journey mapping, as an emerging tool, requires collaboration across multiple disciplines. Future research should seek to establish a universal methodological framework and standardized reporting norms. Additionally, efforts should be made to promote the localization of patient journey maps in medical education and practice by considering the specific characteristics of local healthcare cultures and service systems[5].

6. Conclusion

In summary, innovative approaches, such as nurse-patient communication corpora constructed from patient journey maps and scenario-based teaching driven by virtual user portraits, offer effective means to enhance medical students' clinical communication skills, empathy, and systems thinking. Future research and practice should focus on the long-term validation of patient journey map teaching methods, the integration of modern information technology, the optimization of interdisciplinary collaboration models, the development of complex case bases for multiple diseases, and the establishment of standardized methodologies to help medical students cultivate systems thinking. Patient journey maps have demonstrated significant potential to optimize healthcare service systems, improve patient experience and quality of life, and enhance the efficiency of care management. By continuously integrating data-driven and intelligent technologies and optimizing the application strategies of patient journey maps in practice, more personalized, continuous, and high-quality healthcare services are expected to be provided to patients[24].

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