

Internet-Based Multidisciplinary Transitional Care After Microsurgical Repair of Hand Trauma: A Research Review

Shuqing Yang, Hongxia Cheng

Department of Orthopedics, Taihe Hospital, Hubei University of Medicine, Shiyan 442000, Hubei, China

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Abstract: *Objective:* To review the current research on internet-based multidisciplinary team (MDT) transitional care following microsurgical repair of hand trauma, analyze its mechanisms, implementation pathways, and outcomes, and provide a reference for clinical nursing practice. *Methods:* A keyword-based literature search was conducted in CNKI, Wanfang, Web of Science, and Cochrane Library for articles published from January 2021 to the present, using terms including “internet technology”, “multidisciplinary team”, “transitional care”, “microsurgical repair of hand trauma”, and “postoperative rehabilitation”. *Results:* Thirty-three relevant studies were identified. Internet platforms effectively extended the temporal and spatial boundaries of postoperative care, overcoming the limitations of traditional inpatient nursing and reducing rehabilitation risks associated with inadequate patient knowledge after discharge. MDT integration of microsurgery, rehabilitation, psychology, and nutrition upgraded care from single-discipline to systematic team-based management, enhancing clinicians’ perception of patient status, improving patient engagement, and facilitating high-quality communication. *Conclusion:* MDT transitional care represents a key focus in postoperative rehabilitation after microsurgical repair of hand trauma. Future efforts should prioritize establishing standardized MDT collaboration mechanisms and intelligent information platforms to advance precision transitional care and meet individualized patient needs.

Keywords: Internet technology; Multidisciplinary team (MDT); Transitional care; Microsurgical repair of hand trauma; Postoperative rehabilitation

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1. Introduction

Surgery remains a primary treatment for orthopedic diseases^[1]. However, prolonged postoperative rehabilitation is often accompanied by complications and suboptimal functional recovery if improperly managed. Transitional care, conceptualized as a series of coordinated nursing activities during patients’ transitions between different care settings, ensures the continuity of quality healthcare from hospitals to

homes^[2]. Following hand trauma microsurgery, nurse-led multidisciplinary team (MDT) management utilizing information technology is crucial for comprehensive patient assessment, safety, and accelerated recovery^[3]. Healthcare providers must prioritize care continuity, deliver health education, and empower patients and their families to actively participate as informed partners in their rehabilitation process^[4,5]. By extending the spatiotemporal boundaries of postoperative nursing, MDT transitional care effectively addresses current clinical challenges. Therefore, this review aims to analyze the mechanisms, applications, and existing problems of the Internet-based MDT transitional care model to promote its standardized development in post-hand trauma microsurgery rehabilitation.

2. Materials and methods

2.1. Search strategy

To systematically review the mechanisms, implementation pathways, and clinical effects of Internet-based multidisciplinary team (MDT) transitional care after hand trauma microsurgery, a comprehensive literature search was conducted. Databases including CNKI, Wanfang, Web of Science, and the Cochrane Library were searched from January 2021 to the present. The search utilized a combination of keywords: “Internet technology”, “multidisciplinary team”, “transitional care”, “hand trauma microsurgery”, and “postoperative rehabilitation”.

2.2. Inclusion/exclusion criteria and data extraction

Articles were included if they met the following criteria:

- (1) Focused on hand trauma microsurgery;
- (2) Involved Internet-based MDT transitional care;
- (3) Pertained to the postoperative rehabilitation phase; and
- (4) Original research articles

Studies were excluded if the full text was inaccessible or if the findings were deemed outdated.

Retrieved records were deduplicated, followed by a full-text screening to exclude irrelevant or unclear literature. Data from the final included articles were extracted and synthesized to outline the main research contents.

3. Results

3.1. Literature screening results

Based on specific search keywords, an initial screening was conducted by reviewing titles and abstracts. Subsequently, a full-text review was performed to strictly screen and ultimately identify the eligible articles. A total of 33 eligible articles were included in this review. These selected studies encompass diverse methodologies, including comparative studies, experimental research, and comprehensive reviews, which collectively provide a robust foundation for analyzing the application of Internet-based multidisciplinary models in transitional care.

3.2. Research on the development of MDT transitional care

Transitional care has evolved from simple “referral coordination” to comprehensive “whole-process

management”. Early practices primarily focused on conveying post-discharge rehabilitation instructions from hospital to home. With the integration of the Internet, tele-transitional care has increasingly become a research focus, as it can effectively enhance patient compliance, improve self-management capabilities, and reduce healthcare costs ^[6]. Concurrently, the multidisciplinary team (MDT) model has gradually been incorporated into transitional care. MDT nursing involves systemic assessments conducted by professionals from various disciplines tailored to patients’ complex needs, enabling the formulation of precise, personalized treatment plans ^[7]. Through the collaboration of specialized MDT subgroups, implementing combined interventions, such as nutritional support, functional exercise, and psychological counseling can significantly accelerate postoperative functional recovery in patients following orthopedic and microsurgical procedures ^[8].

3.3. Application of internet technology in postoperative rehabilitation of hand trauma microsurgery

Internet technology has significantly advanced the continuity of care for patients undergoing hand trauma microsurgery, particularly through platforms like WeChat, which is widely adopted in orthopedic nursing. Studies have shown that WeChat-based interventions, such as those implemented by Zhu L. et al. (2025) for replanted finger patients, enhance rehabilitation outcomes. Their approach involves providing regular nursing care supplemented with WeChat-delivered educational materials, psychological counseling, and remote guidance for functional exercises post-discharge. This strategy effectively improves patient adherence, facilitates functional recovery, reduces pain, shortens hospital stays, minimizes complications, and boosts patient satisfaction ^[9].

Information technology (IT) also provides robust support for continuity of care. Wu J. et al. (2024) investigated IT applications in hand trauma patient care, demonstrating how IT management platforms can offer task-oriented upper limb functional and rehabilitation exercises while remotely monitoring patient compliance ^[10]. Huang X. et al. (2021) further validated the effectiveness of WeChat in hand trauma nursing continuity services. By pushing rehabilitation knowledge, offering psychological support in WeChat groups, and providing functional training guidance from rehabilitation physicians, patient adherence and hand function recovery significantly improved ^[11]. Specialized nursing apps and remote monitoring systems, unlike general social platforms, offer customized functionalities, enhanced data security, and comprehensive data collection. Xie Y. et al. (2026) highlighted that digital technology, such as bespoke nursing apps and remote monitoring systems, can be tailored to individual patient needs, collect more comprehensive data, and automate in-depth analysis. This reduces the workload for healthcare professionals and provides patients with analytical reports, thereby increasing their understanding of their own health data ^[12].

3.4. Practical research on continuous nursing post-hand surgery

The implementation of continuous nursing for hand trauma microsurgery patients has demonstrated significant benefits. Xie L.L. (2025) focused on the impact of enhanced recovery after surgery (ERAS)-based continuous rehabilitation nursing on hand function and patient compliance following hand trauma. This approach involves proactive engagement, where medical staff and patients jointly receive new patients, fostering a supportive and collaborative environment ^[13].

Multiple studies highlight the effectiveness of continuous nursing. Hong Y. et al. (2024) found that continuous nursing care significantly improves the quality of life and hand function in patients post-

hand surgery^[14]. Similarly, Zhang L.P. (2024) conducted a comparative study on complex hand trauma microsurgery patients, showing that continuous rehabilitation nursing effectively enhances surgical outcomes, hand function recovery, and improves patients' quality of life during the rehabilitation phase compared to conventional nursing^[15]. Wu C.H. and Xu J. (2024) further emphasized the necessity of multidisciplinary collaboration in continuous rehabilitation nursing for hand trauma microsurgery patients. Their research indicated that such collaboration, involving regular rehabilitation assessments, personalized rehabilitation plans, encouragement of daily functional activities, and psychological support, significantly contributes to functional recovery^[16]. Liu C.L. (2021) also noted that multidisciplinary continuous nursing interventions lead to better hand function recovery in patients with hand injuries^[17]. He Y.Q. (2021) reported that patients receiving continuous rehabilitation nursing exhibited a higher rate of grade 5 hand sensory function compared to a control group, indicating that continuous rehabilitation nursing promotes hand function recovery and improves overall outcomes^[18]. Compared to conventional care, the multidisciplinary collaborative continuous nursing model integrates the advantages of various specialties, overcomes the limitations of single-discipline nursing, and addresses complex, cross-disciplinary challenges in patient postoperative rehabilitation.

4. Discussion

4.1. Multidisciplinary collaboration model in continuous nursing post-hand trauma microsurgery

Continuous nursing after hand trauma microsurgery is a systematic and specialized process demanding long-term care involving multiple medical and nursing disciplines. Consequently, establishing a professional orthopedic multidisciplinary team (MDT) is crucial to provide comprehensive care from preoperative assessment, intraoperative cooperation, to full-cycle postoperative rehabilitation. The core members of such a team typically include attending micro-orthopedic surgeons, specialized orthopedic nurses, and rehabilitation therapists. Depending on the patient's complications, specialists from endocrinology, cardiology, nutrition, and psychology may also be included, with some teams further integrating community nurses and patient families^[3].

Wu C.H. and Xu J. (2024) highlighted that continuous rehabilitation nursing for hand trauma microsurgery patients necessitates multidisciplinary collaboration. This collaboration involves regular rehabilitation assessments, personalized rehabilitation plans, encouragement of daily functional activities, and psychological support, all contributing significantly to functional recovery^[19]. Li S.N. and Mo L.D. (2022) further emphasized that MDT integrates resources from various specialties such as micro-orthopedics, rehabilitation, psychology, and nutrition. This elevates care from a single discipline to a systematic, professional team-based approach, significantly improving healthcare providers' understanding of patients' actual conditions and increasing patient engagement, thereby fostering high-quality communication^[20].

The application of MDT continuous nursing in postoperative rehabilitation for hand trauma microsurgery is a key research focus. Future research and practice should aim to establish standardized multidisciplinary collaboration mechanisms and intelligent information platforms to advance the precise development of continuous nursing and better meet patients' personalized needs.

4.2. Information transparency and sharing in remote continuous care

Effective patient-provider collaboration in remote continuous care necessitates timely information

synchronization to ensure patients understand their treatment progress and future care plans. Traditionally, a lack of patient knowledge about their condition often leads to information asymmetry, fostering distrust and non-compliance. Internet platforms can significantly mitigate this issue. Fan M.Y. et al. (2024) observed that intelligent healthcare ecosystems offer diversified forms of patient-provider communication, with professional medical software enabling patients to interpret pathological test results and providing systematic rehabilitation knowledge easily. This proactive approach alleviates patient anxiety stemming from insufficient information. However, this intelligent integration is a double-edged sword, requiring careful attention to risk avoidance ^[21].

Maintaining transparent information flow between patients and providers is paramount to ensure alignment and build trust, thereby preventing misunderstandings caused by information discrepancies. Li J.Q. and Ou H.M. (2025) highlighted that patient-provider interactions extend beyond treatment plans to include emotional management related to the illness. They advocate that healthcare professionals, when communicating through online consultation platforms, should be attuned to patients' emotions, enhance their medical humanistic literacy, and construct appropriate emotional communication strategies to foster more harmonious relationships and efficient diagnostic channels ^[22]. Furthermore, extensive research focuses on patient information protection in remote healthcare. For instance, Esfahani N.M. (2026) proposed an end-to-end patient-centric solution for internet-based medical service platforms, and Louassef R.B. (2026) introduced a blockchain and grid-based cryptography system for IoT healthcare, both aiming to enhance information security ^[23,24]. Other researchers, including Yemata S. (2025) and Mahmood K. (2025), also prioritize information security for users of internet-based remote medical service platforms ^[25,26].

4.3. Real-time feedback and dynamic adjustment: Forming closed-loop management

Effective patient-provider collaboration is not a singular event but a continuous interactive cycle. Internet technology facilitates this closed-loop management, enabling enterprises and healthcare professionals to develop intelligent medical devices better suited for continuous nursing needs. Currently, patients undergoing hand trauma microsurgery can receive rehabilitation training guidance through customized rehabilitation apps or WeChat mini-programs. They can upload their rehabilitation progress and subjective feelings, allowing healthcare professionals to monitor this data via their own interfaces. With the rapid development of AI technology, AI tools can automate the organization and analysis of this data, providing preliminary reports to both healthcare professionals and patients. This assists healthcare providers in understanding patients' rehabilitation status more efficiently, thereby facilitating the formulation of subsequent rehabilitation plans. Wang H.J. (2025) demonstrated that synchronous continuous health education for family members can enhance patients' self-care abilities and family caregivers' capacity ^[27]. Essentially, after receiving this education, family members act as intermediaries, providing real-time feedback on the patient's recovery, which allows healthcare professionals to adjust rehabilitation plans dynamically. When a patient's recovery deviates from the intended trajectory, the MDT can promptly convene online consultations to analyze the causes and modify the treatment plan. This data-driven dynamic management ensures timely and targeted care, while also increasing patient compliance with rehabilitation nursing.

5. Conclusion

Continuous nursing after hand trauma microsurgery is a critical component of hand surgical rehabilitation,

profoundly impacting patients' functional recovery. This paper systematically reviewed the research progress in continuous nursing following hand trauma microsurgery. The "Internet + MDT Continuous Nursing" model, leveraging internet technology as a link, multidisciplinary collaboration as a framework, and patient-provider synergy as its core, effectively addresses the challenge of fragmented inpatient and outpatient care. Internet platforms such as WeChat, mini-programs, and specialized nursing apps extend the temporal and spatial boundaries of nursing services post-hand trauma microsurgery, overcoming the limitations of traditional hospital-based care. This reduces rehabilitation risks stemming from insufficient patient knowledge post-discharge. The MDT integrates resources from various specialties, including hand microsurgery, rehabilitation, psychology, and nutrition, elevating care from single-discipline nursing to a systematic, professional team-based approach. This significantly enhances healthcare providers' ability to perceive patients' true conditions, increases patient engagement, and fosters high-quality communication. Ultimately, applying MDT continuous nursing in the rehabilitation of hand trauma microsurgery patients is a key research area. Future research and practice should focus on establishing standardized multidisciplinary collaboration mechanisms and intelligent information platforms to promote the precise development of continuous nursing and better meet patients' individualized needs.

Disclosure statement

The author declares no conflict of interest.

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