# Evidence Summary for Discharge Preparation Services in Patients After Total Knee Arthroplasty

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**Abstract:** *Objective:* To systematically summarize and evaluate the evidence on discharge preparation services for patients undergoing total knee arthroplasty, providing an evidence-based foundation for developing scientific and standardized discharge preparation intervention programs in clinical practice. *Methods*: Following the "5S" evidence model, literature such as guidelines, expert consensuses, evidence summaries and randomized controlled trials related to discharge preparation services for total knee arthroplasty patients were retrieved from relevant websites and databases, both domestic and international, from database inception to August 31, 2025. Two researchers independently screened the literature, conducted quality appraisals, and extracted and synthesized the evidence. *Results:* A total of 15 articles were included, comprising 3 guidelines, 4 expert consensuses, 3 evidence summaries, 3 systematic reviews and 2 randomized controlled trials. Ultimately, 23 pieces of evidence were summarized across five aspects. *Conclusion:* This study synthesizes the evidence on discharge preparation services for patients undergoing total knee arthroplasty. It is recommended that healthcare professionals apply this evidence in clinical practice, considering specific circumstances and patient needs.

**Keywords:** Total knee arthroplasty; Discharge preparation service; Evidence summary; Evidence-based nursing; Rehabilitation

## 1. Introduction

With the accelerating trend of population aging in our country, the incidence of Knee Osteoarthritis (KOA) has been increasing annually among the elderly population [1]. KOA leads to persistent pain, joint stiffness and restricted mobility, significantly impacting patients' quality of life and their ability to perform daily self-care. Total knee arthroplasty (TKA) is currently the most effective surgical intervention for end-stage KOA and its procedural volume is exhibiting a rapid growth trend both domestically and internationally [2]. Due to the significant trauma of

TKA surgery and the initial postoperative decline in knee function, patients require a prolonged period of in-home rehabilitation. The TKA patient population is predominantly elderly and commonly presents with multiple chronic comorbidities, rendering them susceptible to adverse health outcomes such as falls and hospital readmissions [3]. These factors severely impede postoperative functional recovery and quality of life. Readiness for Hospital Discharge is a critical indicator used to assess a patient's capacity to safely transition to the home environment for rehabilitation. It reflects the patient's self-management capabilities and potential risks post-discharge [4]. Current research indicates that patients undergoing total knee arthroplasty generally exhibit a moderate level of readiness for hospital discharge [5]. This level of preparedness, in turn, directly influences their postoperative rehabilitation outcomes and the risk of readmission [6]. With the growing adoption of accelerated rehabilitation concepts, patient hospitalization times have been significantly reduced. This renders discharge preparation both more time-constrained and rigorous. Consequently, there is a need for an efficient and critical summary of evidence to guide the completion of the most essential assessment, education and planning within the limited timeframe available. Although existing guidelines and consensus encompass perioperative care for TKA patients, evidence specifically targeting the critical transition period of discharge preparation remains dispersed across various studies, lacking systematic and structured integration. This fragmentation of evidence leaves clinical healthcare professionals without unified, scientific standards for implementing discharge guidance. Consequently, this leads to inconsistency and variability in nursing care delivery, making it difficult to effectively meet the complex home rehabilitation needs of patients. Accordingly, this study aims to synthesize the best evidence regarding discharge preparation services for TKA patients, providing a reference for the development of standardized clinical discharge preparation intervention protocols.

## 2. Information and methods

### 2.1. Identification of the evidence-based issues

We used the PIPOST method as a guide to identify research questions [7]. Target Population(P): Patients undergoing TKA; Intervention(I): Discharge preparation measures related to postoperative TKA; Practitioners(P): Clinical medical staff, including physicians, nurses and rehabilitation therapists; Outcomes(O): Readiness for hospital discharge, quality of discharge teaching, knee function scores, among others; Setting(S): Hospitals; Type of evidence(T): Guidelines, evidence summaries, systematic reviews, clinical decision summaries, expert consensus, meta-analyses, randomized controlled trials (RCTs), or well-designed quasi-experimental studies.

### 2.2. Search strategy

Guided by the "5S" evidence model, a systematic top-down search was conducted [8]. The following databases and websites were searched: China National Knowledge Infrastructure (CNKI), VIP Database, Wanfang Data, SinoMed, Chinese Medical Journal Full-text Database, Medlive, PubMed, CINAHL, Web of Science, The Cochrane Library, Embase, Ovid, BMJ, UpToDate, National Institute for Health and Care Excellence (NICE), Guidelines International Network (GIN), Registered Nurses' Association of Ontario (RNAO), Agency for Healthcare Research and Quality (AHRQ), Scottish Intercollegiate Guidelines Network (SIGN), British Orthopaedic Association (BOA) and American Association of Hip and Knee Surgeons (AAHKS).The Search terms was: "Arthroplasty, Replacement, Knee"[Mesh]/total knee replacement / knee prosthesis implantation / knee arthroplasty / major orthopedic surgery / "Patient Discharge"[Mesh] / discharge planning / discharge services /

discharge health education / transitional care / consensus / guideline / systematic review / clinical decision. The search dates were from the establishment of the database to August 31, 2025.

## 2.3. Inclusion and exclusion criteria

### 2.3.1. Inclusion criteria

(1) Study subjects

Patients aged ≥ 18 years who underwent TKA;

(2) Study content

Research related to discharge preparation, discharge planning and discharge education for TKA patients;

(3) Study types

Guidelines, expert consensus, clinical decision support, evidence summaries, systematic reviews, randomized controlled trials (RCTs), or well-designed quasi-experimental studies;

(4) Chinese or English literature.

### 2.3.2. Exclusion criteria

(1) Literatures are not available through various channels;

(2) Literatures was a plan, draft or only an abstract;

(3) Literatures with failed quality evaluation

## 2.4. Quality assessment

The quality assessment of guidelines was conducted using the Clinical Guidelines Research and Evaluation System II (AGREE II); systematic reviews, expert consensus and RCTs were quality appraised using the relevant JBI critical appraisal tools; evidence summaries were critically appraised using the Critical Appraisal for Summaries of Evidence (CASE) tool [9–11].

## 2.5. Evidence extraction and summary

All evidence extraction and synthesis were conducted independently by two researchers. Any disagreements in their findings were resolved by a third researcher through discussion to reach a final consensus. The evidence was integrated according to the following principles: For consistent findings, the most concise and professionally stated source was selected, while complementary findings were combined based on their logical relationship. In the event of conflicting recommendations, priority was given to evidence of higher quality, more recent publications and findings from authoritative literature. In this study, the evidence was classified using the Joanna Briggs Institute (JBI) Levels of Evidence and Grades of Recommendation system [12]. Evidence was categorized into five levels (Level 1–5) based on the study design, with more rigorous designs corresponding to a higher level of evidence. The recommendations were graded as either Grade A (strong recommendation) or Grade B (weak recommendation).

# 3. Results

## 3.1. Search results

The initial search yielded 2,888 articles. After removing duplicates and screening the titles, abstracts and full texts

of the remaining articles, those that did not meet the inclusion criteria were excluded. A final total of 15 articles were included, which comprised 3 guidelines, 4 expert consensus statements, 3 evidence summaries, 3 systematic reviews and 2 RCTs. The literature screening process is shown in **Figure 1,** The general characteristics of the included literatures are shown in **Table 1**.
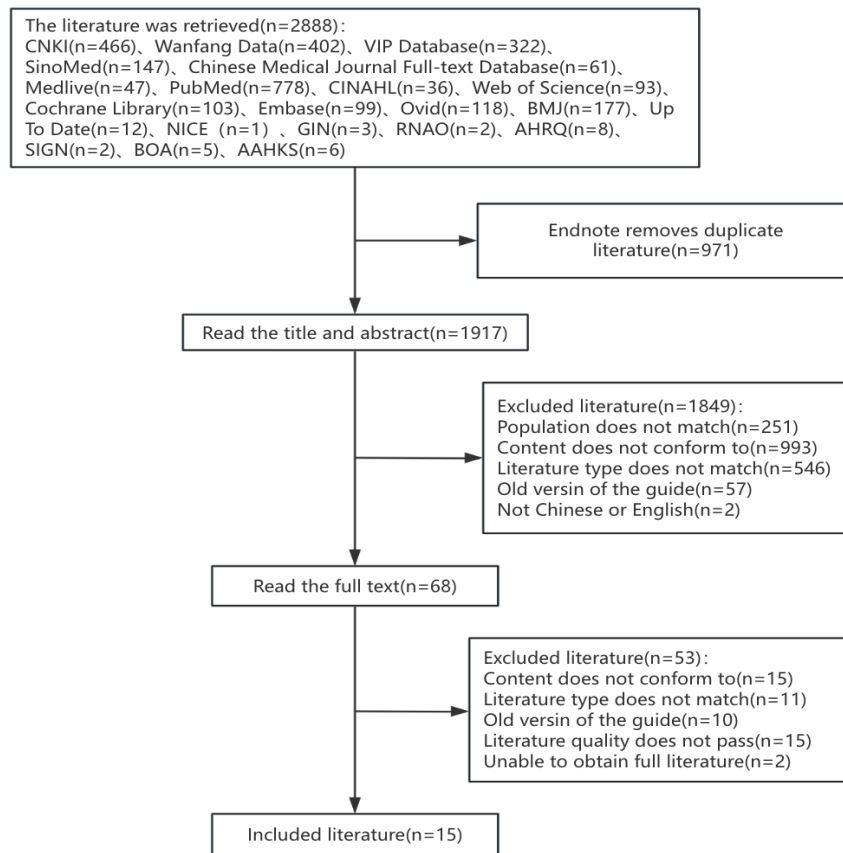


**Figure1    Literature screening process**

**Figure 1.** Literature screening process.

**Table 1.** General characteristics of the included literatures (n = 15)

| Included literature | Year of publication (year) | Literature reference | Type of literature | The literature theme |
|---|---|---|---|---|
| Jiang Y et al.[13] | 2024 | CNKI | Expert consensus | Expert consensus on optimization of perioperative health education programs in orthopedics under the concept of enhanced recovery after surgery |
| Hu W et al.[14] | 2022 | CNKI | Expert consensus | Expert consensus on perioperative nutritional management for enhanced recovery after major orthopedic surgery |
| Chinese Association for Promotion of Rehabilitation Technology Transfer and Development et al.[15] | 2025 | Chinese Medical Journal Full-text Database | Expert consensus | Expert consensus on perioperative chronic disease management for enhanced recovery in orthopedics and anesthesiology (2025 edition) |

**Table 1 (Continued)**

| Included literature | Year of publication (year) | Literature reference | Type of literature | The literature theme |
| --- | --- | --- | --- | --- |
| Geriatric Rehabilitation Branch of Chinese Geriatrics Society et al. [16] | 2024 | Chinese Medical Journal Full-text Database | Expert consensus | Chinese expert consensus on perioperative rehabilitation for total knee arthroplasty |
| Jette D U et al.[17] | 2020 | GIN | Guideline | Physical therapist management of total knee arthroplasty |
| Joint Surgery Group of Orthopedics Committee of Beijing Medical Association et al.[18] | 2022 | CNKI | Guideline | Chinese guidelines for perioperative pain management in total knee arthroplasty (2022) |
| RNAO[19] | 2023 | RNAO | Guideline | Transitions in Care and Services |
| Huang Y R et al.[20] | 2023 | CNKI | Evidence summary | Best evidence summary of exercise interventions for patients undergoing total knee arthroplasty |
| Xie Y et al.[21] | 2022 | CNKI | Evidence summary | Best evidence summary of preoperative. prehabilitation for patients undergoing hip/knee arthroplasty under enhanced recovery after surgery |
| Wang H L et al.[22] | 2024 | Chinese Medical Journal Full-text Database | Evidence summary | Best evidence summary of perioperative. enhanced recovery after surgery nursing care for patients undergoing hip/knee arthroplasty |
| Mao H et al.[23] | 2022 | PubMed | Systematic review | Effectiveness of nurse-led discharge service on adult surgical inpatients: a meta-analysis of randomized controlled trials |
| Konnyu K Jet al.[24] | 2023 | PubMed | Systematic review | Rehabilitation for total knee arthroplasty: a systematic review |
| Wang Y et al. [25] | 2020 | BMJ | Systematic review | Quality appraisal of clinical guidelines for venous thromboembolism prophylaxis in patients undergoing hip and knee arthroplasty: a systematic review |
| Mohamad Ghasempour et al.[26] | 2025 | PubMed | RCT | Effect of interdisciplinary discharge programme on daily function, quality of life, and pain intensity in patients undergoing joint replacement surgery |
| Bao L X et al.[27] | 2022 | Chinese Medical Journal Full-text Database | RCT | Application of rehabilitation guidance based on discharge readiness service in total knee arthroplasty |

## 3.2. Quality evaluation results of the included literature

(1) The quality appraisal of the four expert consensus statements revealed them to be of high quality, with all evaluation criteria marked "yes" [13–16].

(2) Three guidelines were included [17–19]. Two were designated Grade A (6 domains scoring $\geq$ 60%) and one was Grade B (5 domains scoring $\geq$ 60%). The quality of the three guidelines was high, with detailed standardized scores and recommendation levels presented in **Table 2**.

(3) Three evidence summaries were included [20–22]. These were deemed to be of high quality and included because, with the exception of a "partially yes" rating for item 3 ("Is the reviewer/editor information for the summary transparent?"), all other items on the appraisal tool were rated "yes".

(4) Three systematic reviews were included. The study by Huina Mao et al. met all appraisal criteria ("yes" for all items) [23]. The reviews by Konnyu et al. and Wang et al. also met the threshold for inclusion, with

all items rated "yes" except for item 9 ("Did the review authors use a satisfactory technique for assessing the risk of bias in individual studies that were included in the review?"), which was rated "unclear" [24,25].

(5) Two RCTs were included in the review [26,27]. The quality appraisal for both studies resulted in a "no" rating for item 4 ("Were participants blind to treatment assignment?") and item 5 ("Were those delivering the treatment blind to treatment assignment?"). Additionally, item 10 ("Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?") was rated "unclear". All other items were rated "yes", the studies were considered to be of high quality and were included.

**Table 2.** Quality evaluation results of clinical guidelines (n = 3)

| Guideline | Standardized scores in various domains (%) | | | | | | ≥ 60% | ≥ 30% |
|---|---|---|---|---|---|---|---|---|
| | Scope and purpose | Stakeholder involvement | Rigor of development | Clarity of presentation | Applicability | Editorial independence | | |
| Diane U Jette et al. [17] | 98.15 | 83.33 | 88.89 | 87.04 | 77.78 | 100 | 6 | 6 |
| Joint Surgery Group of Orthopedics Committee of Beijing Medical Association et al. [18] | 85.19 | 79.63 | 86.81 | 92.59 | 52.78 | 100 | 5 | 6 |
| RNAO [19] | 96.30 | 96.30 | 91.67 | 88.89 | 66.28 | 100 | 6 | 6 |

## 3.3. Summary and description of evidence

This study synthesized the evidence regarding discharge preparation services for TKA patients, ultimately generating 25 items of evidence organized into 5 themes, as shown in **Table 3**.

**Table 3.** Evidence summary for discharge preparation services in patients after total knee arthroplasty

| Category | Content of evidence | Level | Recommendation level |
|---|---|---|---|
| Admission assessment and education | 1. Establish a multidisciplinary team composed of orthopedic doctors, rehabilitation doctors, specialist nurses, nutritionists, psychological counselors, etc., and conduct standardized training for the team in the intervention of discharge preparation for TKA [19–21,23,26,27] | 1 | A |
| | 2. Evaluate the patient's personal condition, disease-related indicators (knee joint range of motion, lower limb muscle strength, degree of joint deformity and pain), health literacy, social support (economic status, living environment, care ability), etc. and based on the situation, a multidisciplinary team jointly formulates a discharge preparation plan [13,15,19,27] | 5 | A |
| | 3. Explain the surgical plan, rehabilitation plan and knowledge of artificial joint protection to the patient, emphasize the importance of active knee joint exercise in the early postoperative period and encourage the patient to participate in self-management [21] | 5 | B |
| | 4. Conduct comprehensive preoperative examinations to screen for and intervene in osteoporosis, correct anemia, and address other chronic diseases [22] | 5 | A |
| Preoperative preparation and education | 5. Cease smoking and alcohol and maintain a BMI40kg/m$^2$, Underlying comorbidities should be managed as follows: maintain fasting blood glucose 8 mmol/L in diabetic patients；control preoperative blood pressure below 160/90 mmHg in hypertensive patients；discontinue clopidogrel 5–7 days preoperatively in patients with coronary heart disease；preoperative use of opioid analgesics should be avoided to prevent postoperative tolerance [15,21,22] | 5 | A |
| | 6. Conduct health education, covering postoperative rehabilitation plans, nutritional support, prevention of complications, safe transfer techniques, the use of assistive devices, fall prevention and factors influencing discharge readiness [13,15,17,21,26] | 5 | B |

**Table 1 (Continued)**

| Category | Content of evidence | Level | Recommendation level |
|---|---|---|---|
| | 7. Nutritional Support: Administer high-protein nutritional support to malnourished patients (e.g., albumin < 35 g/L). For high-risk patients, implement combined enteral and parenteral nutrition for 7–14 days preoperatively, aiming for a target protein intake of 1.5–2.0g/(kg·d) [14,15] | 5 | A |
| | 8. Initiate a prehabilitation program 4–8 weeks preoperatively, emphasizing intensive quadriceps strengthening, balance training and cardiopulmonary conditioning to enhance muscle strength and knee joint stability [13,15,16,21] | 5 | A |
| Postoperative care and rehabilitation | 9. Multimodal Analgesia: Implement the routine administration of analgesics combined with localized knee cryotherapy to alleviate swelling and pain. Pain management protocols and patient education strategies should be adjusted in a timely manner based on pain assessment outcomes [13,18,22] | 5 | A |
| | 10. Incorporate Traditional Chinese Medicine analgesic techniques（specifically auricular point sticking and early postoperative acupuncture）as complementary therapies for pain management if resources permit [18] | 5 | B |
| | 11. Resume oral food intake as early as possible after the operation. Prioritize the supplementation of high-quality protein. For those with poor function, take oral digestive enzymes or enteral nutrition preparations. If necessary, introduce human albumin. The target is: albumin > 35g/L, prealbumin > 200mg/L [14,15,21] | 5 | A |
| | 12. Deep Vein Thrombosis Prophylaxis: Adjust anticoagulation regimens dynamically based on patient risk assessments. Instruct patients to engage in early postoperative ambulation and implement appropriate therapeutic interventions and mechanical prophylaxis [13,16,25] | 1 | A |
| | 13. Positioning Management: Instruct patients to maintain the operated knee in a flexed position (30–90°) during rest to minimize immediate postoperative blood loss and swelling. Placing a pillow under the knee is recommended to prevent flexion contractures [16,17] | 1 | A |
| | 14. Initiate rehabilitation exercises, including ankle pumps and quadriceps isometric contractions, immediately upon the subsidence of anesthesia. Mobilization should occur within 24 hours postoperatively, utilizing a walker for gait training. The regimen should begin with low-intensity isometric and isotonic exercises, gradually transitioning to resistance training to facilitate the timely achievement of discharge criteria. [13,17,20,22,24,27] | 1 | A |
| | 15. Initiate gait correction and activities of daily living training as early as possible to enhance transfer and personal care abilities (e.g. bed-to-chair transfers, toileting, grooming and dressing). For patients demonstrating poor adherence, employ "education-feedback" model to provide iterative guidance. Avoided to routine use Continuous Passive Motion [13,17,22,24,27] | 1 | A |
| | 16. Utilize neuromuscular electrical stimulation to enhance quadriceps strength；doing sports in the water under the premise of taking good waterproof of measures for the wound can reduce the pressure on the joints；apply motor imagery therapy may activate brain nerves, enhance motor learning, assist in pain relief and promote early functional recovery [16,18,20,21] | 5 | B |
| | 17. Record the factors that hinder the implementation of postoperative rehabilitation exercises (such as kynophobia and pain), and the multidisciplinary team discusses and adjusts the training plan [22] | 5 | A |
| Discharge assessment and guidance | 18. Objective discharge criteria: (1) dressing independently;(2) transfer in and out of bed independently;(3) independently transfer to a chair or toilet;(4) mobilize independently with the aid of walker or crutches;(5) perform personal care independently;(6) Walk more than 70 meters with crutches [20] | 5 | B |
| | 19. Formulate individualized rehabilitation protocols (exercise frequency and intensity) tailored to patient tolerance and specific needs. Remote rehabilitation guidance for patients can be used if conditions permit [16,20] | 5 | A |
| | 20. Home environment assessment and modification: Conduct a survey of the patient's living environment and recommend necessary modifications to domestic facilities. Provide targeted Activities of Daily Living training for both patients and caregivers. This should be followed by a cycle of assessment, analysis and retraining until full mastery is achieved [26,27] | 1 | A |
| Follow-up and continuity of care | 21. A multidisciplinary team assesses the rehabilitation needs of patients after discharge and provides knee joint monitoring and continuous support [14,19,22,23] | 5 | A |

**Table 1 (Continued)**

| Category | Content of evidence | Level | Recommendation level |
|---|---|---|---|
| | 22. Outpatient follow-ups were conducted at 1- and 3-months post-discharge to assess knee joint function, surgical incision status, complication prevention, and adherence to rehabilitation exercises. If issues were identified, a new round of intervention was initiated [19,27] | 1 | B |
| | 23. Upon the restoration of postoperative function, the following training modalities are recommended:(1) Aerobic Exercise: Priorities should be given to activities with relatively low joint loading, such as walking, cycling, swimming and rowing; (2) Functional Training: Interventions should target specific activities of daily living that are currently impaired, including brisk walking, stair climbing and sit-to-stand maneuvers. High-impact sports, such as running and soccer are not recommended. Instead, patients are advised to engage in low-to-moderate intensity exercises, such as walking, cycling and swimming [20] | 5 | A |

# 4. Discussion

## 4.1. Exploration and application of standardized pathways for multidisciplinary team collaboration in discharge planning services

Substantial evidence from this study indicates that Multidisciplinary Team (MDT) constitute a pivotal component in establishing a comprehensive and coordinated discharge planning service framework [19–21,23,26,27]. Establish a dynamic collaborative mechanism composed of multidisciplinary healthcare professionals, including orthopedic surgeons, rehabilitation physicians, specialist nurses and dietitians. However, in clinical practice, discrepancies in the work rhythms of different disciplines make it challenging to maintain high-frequency, full-team in-person MDT rounds, may reduce discharge planning to a mere formality. As nurses maintain continuous contact with patients, they act as a pivotal communication hub to facilitate MDT collaboration, thereby enabling the provision of systematic, continuous and individualized intervention plans for patients. This holistic team collaboration facilitates the simultaneous resolution of complex issues such as postoperative pain, functional impairment, malnutrition and anxiety. Consequently, it improves the quality of patient rehabilitation and enhances their readiness for discharge [23,26].

The 23 pieces of evidence summarized in this study are derived from diverse sources and are scattered in content. This has led to variations in practice across institutions regarding discharge education, assessment tools and functional training standards, thereby hindering the standardization and homogenization of discharge planning services. To promote the clinical application of the MDT model, it is essential to integrate fragmented evidence into structured standardized protocols. This involves clearly delineating the specific responsibilities and handover details of physicians, nurses, rehabilitation therapists, and dietitians during the perioperative period. Such clarity facilitates effective collaboration and ensures the integrity and continuity of interventions, thereby improving service quality, enhancing patients' confidence in rehabilitation and optimizing discharge planning services.

## 4.2. Systematic rehabilitation intervention is a key strategy for discharge planning services in TKA

Most TKA patients suffer from chronic comorbidities, and there is significant heterogeneity in their functional and rehabilitation needs. Consequently, the team must complete a comprehensive assessment within 24 hours of admission. This evaluation encompasses sociodemographic characteristics, disease-specific functional indices, health literacy, and psychosocial support, thereby laying the foundation for formulating subsequent individualized

discharge plans [13,15,19,27]. As most patients are elderly with limited cognitive and self-management capabilities, active caregiver participation and shared decision-making among medical staff, patients and families are crucial for the successful implementation of care plans. These factors effectively enhance adherence to rehabilitation training and home management [28,29]. Therefore, it is essential to strengthen systematic caregiver education within discharge planning services, enhancing their ability to assist in various aspects and ultimately supporting better patient recovery [30].

Evidence 3–8 underscores the critical importance of preoperative preparation and education. Based on the initial assessment, interventions should include chronic disease control, nutrition and weight management, thrombosis prevention and prehabilitation training. The use of the "teach-back method" (Evidence 15) is recommended, requiring patients to retell or demonstrate rehabilitation maneuvers and knowledge to validate their mastery. At this stage, caregivers should not only provide emotional support and supervision but also actively participate in the decision-making process. They are expected to assist patients in comprehending health education content and receive necessary training in caregiving skills to enhancing the practical effectiveness of family support [31].

Factors such as early postoperative pain, fatigue and Kinesio phobia can significantly impede rehabilitation progress [32]. In the context of Enhanced Recovery After Surgery (ERAS), hospital lengths of stay are significantly shortened, systematic rehabilitation becomes particularly crucial [33]. Evidence 9–17 emphasizes the implementation of systematic postoperative rehabilitation led by the MDT. This encompasses pain management, range of motion (ROM) exercises, training in self-care abilities, nutritional guidance and psychological support. It also suggests incorporating Traditional Chinese Medicine (TCM) modalities, including auricular acupressure, acupuncture, Kinesio taping and lymphatic drainage, to mitigate pain and swelling [34]. Throughout the entire process, standardized tools should be continuously utilized to assess patients' knee joint function and rehabilitation adherence. Concurrently, caregivers' caregiving capabilities should be enhanced through methods such as illustrated materials, demonstration videos, or scenario-based training, ensuring that they can correctly assist and supervise patients in completing the discharge preparation plan [31].

To ensure safe patient discharge and a smooth transition to home-based rehabilitation, pre-discharge assessment and preparation are also crucial. The patient's discharge readiness should be comprehensively evaluated based on the objective criteria of Evidence 18, combined with an assessment of their family and social support. Because stairs, anti-slip measures in the home environment and caregiver competence all affect patient safety, evidence 20 recommends assessing the home environment and making modifications where necessary [35]. Additionally, it advises strengthening caregiver training in safe transfer, ambulation assistance, and rehabilitation support skills to ensure a safe transition for patients and reduce home safety risks.

## 4.3. Continuous follow-up supported by information technology is an important approach to enhancing the quality of discharge preparation services

With the widespread adoption of ERAS concepts, the average length of stay for TKA has been significantly shortened. However, postoperative patients still undergo a prolonged period of functional recovery after discharge; therefore, discharge preparation services should be extended from the hospital to the community and home. Evidence 22 and 23 indicate that post-discharge follow-ups should be conducted to assess patients' knee joint function, pain control and rehabilitation exercise status, allowing for the dynamic adjustment of rehabilitation plans. In clinical practice, the development of "Internet + Healthcare" has further expanded the scope of discharge preparation services, enabling remote rehabilitation guidance and process monitoring [36,37]. For instance, mobile

applications and wearable devices can record metrics such as joint range of motion and gait in real-time [38]. This assists in identifying patients' recovery status, facilitating a shift from fixed scheduled follow-ups to on-demand interventions and allowing the team to make individualized adjustments.

However, the application of information technology remains limited by factors such as patient acceptance, regional resources and cost [36,39]. To ensure standardized post-discharge management, the development of a unified discharge preparation management platform that provides targeted rehabilitation guidance should be explored. At the same time, it is essential to enhance the information tool proficiency of both patients and caregivers, leveraging data support to achieve continuous cross-stage nursing care. Furthermore, collaboration between hospitals and community health service centers should be actively promoted. By having community nurses assume partial monitoring and guidance responsibilities, a system of hierarchical medical care can be implemented to optimize the allocation of medical resources. This approach contributes to facilitating patients' long-term functional recovery and lowering the risk of readmission.

## 4.4. Limitations

Although this study comprehensively summarizes 23 pieces of evidence regarding discharge readiness interventions for TKA patients and we recommend their adoption. However, some of the recommendations are affected by regional and cultural differences and need to be adjusted considering local realities. Discharge preparation services involve multi-disciplinary and multi-stage collaboration. The integration effect and long-term impact still need further research for verification and optimization.

## 5. Conclusion

Utilizing an evidence-based approach, this study systematically searched and synthesized high-quality evidence regarding discharge preparation services for patients undergoing TKA. These findings provide a foundation for constructing a scientific, systematic and operable TKA discharge preparation service protocol and is significant for promoting safe patient discharge and improving rehabilitation outcomes. Besides, discharge preparation services should regard as a standardized and mandatory clinical pathway rather than an optional supplementary service. In clinical practice, should made efforts to establish an evidence-based minimum standardized intervention protocol, including mandatory assessment items, core educational content and safety goals that must be achieved prior to discharge, to ensure basic service quality. Furthermore, future research should integrate clinical requirements with appropriate technologies to further validate the effectiveness of procedural implementation, thereby driving the continuous improvement of TKA discharge preparation services.

## Disclosure statement

The authors declare no conflict of interest.

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