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Impact of Multidimensional Comprehensive Nursing Based on ERAS Principles on Early Mobilization and Recovery Outcomes in Postoperative Patients with Laparoscopic Colorectal Cancer

Juan Su, Lichun Liang*

Department of Oncology Surgery, The First Affiliated Hospital of Yangtze University, Jingzhou, China
Email: 810170260@qq.com, *605486880@qq.com

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Abstract

Objective: To improve the early ambulation compliance rate in postoperative patients with laparoscopic colorectal cancer and evaluate the clinical recovery effects of a multidimensional comprehensive nursing intervention program based on Enhanced Recovery After Surgery (ERAS) principles. **Methods:** Patients undergoing laparoscopic colorectal cancer surgery in Ward 1 of the Oncology Surgery Department at Jingzhou First People's Hospital were selected as the study subjects. The pre-intervention group consisted of 33 cases from October to December 2024 (routine nursing), while the post-intervention group included 62 cases from January to December 2025 (multidimensional comprehensive nursing). The PDCA cycle and fishbone diagram analysis were used to identify barriers to early ambulation. Comprehensive nursing interventions were implemented in areas such as pipeline management, multimodal analgesia (integrating traditional Chinese and Western medicine), interventions for activity intolerance, and standardization of functional exercises. Indicators, including early ambulation compliance rate, postoperative pain, nausea and vomiting, and patient satisfaction, were compared between the two groups. **Results:** After the intervention, the early ambulation compliance rate increased from 30.3% to 48.4% ($P = 0.022$); the incidence of postoperative acute pain decreased from 69.7% to 13.3% ($P < 0.001$), and the incidence of postoperative nausea and vomiting decreased from 33.3% to 16.1% ($P = 0.042$); patient satisfaction improved from 85.0% to 98.4% ($P < 0.001$); there was no statistically significant difference in the readmission rate within 48 hours after discharge between the two groups. **Conclusion:** Multidimensional comprehensive nurs-

ing interventions based on the ERAS concept can effectively improve early ambulation compliance in patients undergoing laparoscopic colorectal cancer surgery, reduce postoperative discomfort such as pain, nausea, and vomiting, and enhance patient satisfaction and recovery quality. These interventions have positive significance in promoting postoperative rehabilitation and are worthy of clinical application.

Keywords

Enhanced Recovery after Surgery, Laparoscopic Colorectal Cancer Surgery, Early Ambulation, Perioperative Nursing, PDCA Cycle

1. Introduction

Colorectal cancer is a clinically common malignant tumor of the digestive system, seriously threatening patients' lives, health, and quality of life [1]. Laparoscopic surgery, with its advantages of minimal trauma, reduced bleeding, and faster postoperative recovery, has become the primary surgical approach for the radical treatment of colorectal cancer. The quality of perioperative nursing directly impacts patient recovery outcomes. The Enhanced Recovery After Surgery (ERAS) concept, by optimizing perioperative management, alleviating surgical stress, and promoting early recovery of organ function, has been widely applied in clinical gastrointestinal surgery practices [2] [3]. Postoperative early ambulation, as one of the core measures of ERAS, can effectively promote gastrointestinal function recovery, improve circulation, reduce the risk of complications such as pulmonary infections and deep vein thrombosis, and holds significant value in shortening hospital stays and improving prognosis [4] [5]. The international ERAS guidelines also emphasize that the implementation of early ambulation is influenced by multiple factors, and systematic intervention strategies are therefore required [6].

However, in clinical practice, influenced by multiple factors including postoperative pain, indwelling pipelines, insufficient awareness, poor physical tolerance, and traditional bed-rest concepts, the compliance with early ambulation among patients undergoing laparoscopic colorectal cancer surgery is generally low, making it difficult to achieve ideal execution rates and thereby limiting the full realization of ERAS recovery effects [7] [8]. Previous nursing approaches have primarily relied on routine education and passive prompting, lacking systematic assessment, individualized guidance, and closed-loop management. Additionally, the application of traditional Chinese medicine (TCM) nursing techniques has been insufficient, and no standardized, efficient, comprehensive intervention scheme has been established. In recent years, the advantages of integrated Chinese and Western medicine nursing in postoperative pain management and gastrointestinal function recovery have gained increasing attention, but high-quality evidence for its systematic integration with ERAS principles remains lacking [8] [9].

To address this, the present study was guided by ERAS principles and incorpo-

rated the PDCA (Plan-Do-Check-Act) cycle to implement continuous nursing quality improvement. It also integrated distinctive TCM nursing techniques (such as ear acupressure with seeds, acupoint application, and herbal hot compresses) to optimize pain management. A multidimensional comprehensive nursing scheme was developed, encompassing pipeline management, multimodal analgesia, interventions for activity intolerance, and standardized functional exercises. The aim was to enhance the execution rate of early ambulation in patients, improve recovery outcomes, and provide empirical evidence for optimizing clinical strategies in postoperative rapid recovery nursing.

2. Materials and Methods

2.1. Study Subjects

Patients who underwent laparoscopic colorectal cancer surgery in Ward 1 of the Oncology Surgery Department at Jingzhou First People's Hospital from October 2024 to December 2025 were selected as the study subjects.

Inclusion Criteria:

1) Meet the indications for laparoscopic radical colorectal cancer surgery;

2) Postoperative consciousness is clear, vital signs are stable, and the patient can cooperate with nursing assessment and intervention;

3) No severe bone and joint diseases, fractures, or other physical conditions that limit activity;

4) No severe dysfunction of major organs such as the liver, kidney, or heart;

5) Voluntarily participate in this study and sign an informed consent form.

Exclusion Criteria:

1) Intraoperative conversion to open surgery or performance of special procedures such as Miles or Hartmann surgery;

2) Postoperative transfer to the ICU due to severe complications, unable to cooperate with early ambulation;

3) Patients with concomitant mental illness, cognitive impairment, or pregnancy;

4) Incomplete clinical data.

2.2. Ethical Consideration

This study was approved by the Medical Ethics Committee of The First Affiliated Hospital of Yangtze University (Approval No.: KY2026-066-01). All participants were informed of the study purpose, procedures, and potential benefits and risks, and voluntarily signed written informed consent forms.

2.3. Baseline Data

Pre-intervention Group (October-December 2024): A total of 33 cases, including 18 males and 15 females; aged 42 - 78 years, with an average age of (61.2 ± 8.5) years; 19 cases of colon cancer and 14 cases of rectal cancer; 11 cases with ASA grade I and 22 cases with ASA grade II. The mean Charlson Comorbidity Index

(CCI) was 3.2 ± 1.1. The mean operative time was (152.5 ± 28.3) minutes. Preventive stoma was created in 4 patients (12.1%).

Post-intervention Group (January-December 2025): A total of 62 cases, including 35 males and 27 females; aged 40 - 81 years, with an average age of (60.8 ± 9.1) years; 36 cases of colon cancer and 26 cases of rectal cancer; 22 cases with ASA grade I and 40 cases with ASA grade II. The mean Charlson Comorbidity Index (CCI) was 3.1 ± 1.0. The mean operative time was (148.6 ± 31.2) minutes. Preventive stoma was created in 9 patients (14.5%).

There were no statistically significant differences between the two groups in terms of gender, age, tumor location, ASA classification, CCI, operative time, or the proportion of preventive stoma ($P > 0.05$), indicating that the baseline characteristics were comparable.

2.4. Study Methods

The pre-intervention group received routine perioperative nursing (including routine education, on-demand analgesia, and general activity guidance). The post-intervention group implemented multidimensional comprehensive nursing interventions based on ERAS principles on top of routine nursing, as detailed below.

2.4.1. Establishment of Quality Improvement Team

The head nurse served as the overall project leader, with three specialized subgroups established: the Clinical Case Collection Group (responsible for case screening, data collection, and baseline surveys), the Nursing Measures Supervision Group (responsible for measure implementation, health education, and follow-up), and the Data Integration Group (responsible for statistical analysis and data archiving).

2.4.2. Topic Selection

A scoring method was used, evaluating four dimensions: superior policies, feasibility, urgency, and team capability. The topic "Improving the Early Ambulation Compliance Rate in Postoperative Patients with Laparoscopic Colorectal Cancer Using ERAS Principles" was selected as the improvement theme.

2.4.3. Current Status Assessment and Goal Setting

The early ambulation compliance rate before the intervention was 30.30%; referencing literature [10] and relevant quality improvement standards, combined with team capabilities, the target value was set at 60% (influenced by clinical practical factors, with improvement in compliance rate as the primary evaluation criterion).

2.4.4. Cause Analysis

A self-designed questionnaire titled "Investigation of Barriers to Early Ambulation After Laparoscopic Colorectal Cancer Surgery" was used for root cause analysis. The questionnaire was developed based on a literature review and group discussions, covering five dimensions: "tubing-related factors", "pain-related factors",

"cognitive factors", "physical factors", and "environmental factors", with a total of 15 items. Each item was rated on a 5-point Likert scale ranging from "no influence" to "very strong influence". The questionnaire was administered through one-on-one interviews conducted by the responsible nurses within 48 hours after surgery. The Cronbach's α coefficient was 0.87. A total of 33 questionnaires were distributed, and all 33 valid questionnaires were recovered. The results showed that the top three factors affecting early ambulation were: multiple drainage tubes with concerns about accidental dislodgement (37.5%), significant postoperative pain (25.0%), and insufficient awareness among patients and their families (12.5%). In addition, a fishbone diagram analysis was performed from five perspectives: personnel, equipment, materials, methods, and environment.

2.4.5. Intervention Measures (Post-Intervention Group)

1) Optimization of Pipeline Management: Properly secure various pipelines and strengthen pipeline assessments during shift handovers. After multidisciplinary team evaluation (physicians, nurses, anesthesiologists), remove unnecessary pipelines as early as possible (e.g., remove urinary catheter on postoperative day 1; remove abdominal drainage tube when drainage volume < 50 mL/d and no abnormalities). Reduce infusion volume and shorten intravenous infusion time.

2) Multimodal Analgesia: Use NRS for dynamic pain assessment (every 4 hours, with additional assessment before activity), combined with an integrated Chinese and Western medicine analgesia regimen. Western medicine component: Use non-steroidal anti-inflammatory drugs (flurbiprofen axetil) as the base for analgesia, supplemented with opioids (dezocine) for rescue analgesia when necessary. Traditional Chinese medicine component: i) Ear acupressure with seeds: Select acupoints such as Shenmen, Sympathetic, Subcortex, and Large Intestine; start 1 day preoperatively and continue for 72 hours postoperatively. ii) Acupoint application: Apply to Zusanli (ST36) and Hegu (LI4) acupoints, starting 6 hours postoperatively, once daily. iii) Herbal hot compress: Apply to the abdomen (avoiding the incision area), twice daily for 20 minutes each time. Through multi-pathway synergistic effects, reduce postoperative pain and minimize adverse reactions related to opioids.

3) Interventions for Activity Intolerance: Use MRC muscle strength grading (lower limb strength ≥ Grade 3 before attempting to get out of bed) and orthostatic intolerance warnings (allow standing only after sitting up without dizziness or pallor). Use walkers or family assistance, implementing a progressive three-stage activity method of "sit-stand-walk": Stage 1 (6 - 24 hours postoperatively): Bedside turning, hip lifting, and ankle pump exercises. Stage 2 (24 - 48 hours postoperatively): Bedside sitting for 5 - 10 minutes, 3 - 4 times daily. Stage 3 (within 48 hours postoperatively): Assisted walking out of bed, with the first walk distance ≥ 5 m, gradually increasing to 20 - 50 m.

4) Standardization of Functional Exercises: Develop bedside exercise routines (including ankle pump movements, straight leg raises, etc.) and a three-step out-of-bed protocol (bed sitting → dangling legs at bedside → standing and walking).

Produce educational videos with QR codes posted for access, and distribute illustrated guidance manuals to achieve visualized and standardized instruction.

2.4.6. Intervention Implementation Status

Among the 62 patients in the intervention group, the implementation of core interventions was as follows:

A) The urinary catheter removal rate on postoperative day 1 was 98.4% (61/62). Abdominal drainage tubes were removed when the daily drainage volume was less than 50 mL, with a mean removal time of (3.2 ± 0.8) days after surgery.

B) The NRS pain assessment was performed every 4 hours in 100% of cases, and the pre-activity reassessment rate was 95.2% (59/62).

C) Traditional Chinese medicine nursing interventions: ear acupoint pressing was completed in 100% (62/62), acupoint application in 100% (62/62), and herbal hot compress in 95.2% (59/62; 3 cases were postponed due to wound dressing exudation).

D) Staged mobilization rates: stage 1 (bed exercises) was achieved in 100% (62/62), stage 2 (sitting at the bedside) in 93.5% (58/62), and stage 3 (assisted ambulation) in 77.4% (48/62). Reasons for not completing stage 3 included patient refusal (6 cases), orthostatic intolerance (4 cases), increased postoperative pain (2 cases), and early discharge the morning after nighttime surgery (2 cases).

All 15 nurses responsible for implementing the interventions received specialized training on ERAS and traditional Chinese medicine nursing, with a 100% (15/15) pass rate in both theoretical and practical assessments.

2.5. Observation Indicators

Primary Indicator: Early ambulation compliance rate—defined as the proportion of patients who, within 48 hours postoperatively, complete at least one assisted walk out of bed ≥ 5 m with nurse assistance.

Secondary Indicators:

1) Preoperative rehabilitation exercise compliance rate—the proportion of patients who can correctly recite/demonstrate core exercise movements (ankle pump exercises, bed turning, deep breathing training).

2) Postoperative acute pain incidence—NRS score ≥ 4 within 48 hours postoperatively.

3) Postoperative nausea and vomiting incidence—patients experiencing nausea or vomiting within 48 hours postoperatively.

4) Patient satisfaction: A self-designed "Inpatient Nursing Satisfaction Questionnaire" developed by the department was used to assess satisfaction on the day before discharge. The questionnaire consisted of five dimensions—"nurse-patient communication", "pain management", "activity guidance", "catheter care", and "health education"—with a total of 10 items. Each item was rated on a 5-point scale ranging from "very dissatisfied" to "very satisfied", with a total possible score of 100. A score of ≥90 was defined as "satisfied". The questionnaire was distributed in paper form by the ward teaching nurse one day prior to discharge and

collected after anonymous completion by the patients. In the pre-test, the Cronbach's α coefficient was 0.89, and the content validity index (CVI) was 0.92.

5) The 48-hour readmission rate after discharge (readmission for any reason).

2.6. Statistical Methods

Data analysis was performed using SPSS 26.0 software. Categorical data were expressed as the number of cases (percentage), and inter-group comparisons were conducted using the χ^2 test. When any theoretical frequency was < 5, Fisher's exact probability method was used. Differences were considered statistically significant at $P < 0.05$. Percentages were reported to one decimal place, and P-values were reported to three decimal places (with values less than 0.001 expressed as $P < 0.001$).

3. Results

3.1. Participant Flow

During the study period, a total of 108 patients undergoing laparoscopic colorectal cancer surgery were screened. In the pre-intervention group (October to December 2024), 33 patients were included, and 3 were excluded (2 converted to open surgery intraoperatively and 1 had incomplete data). In the post-intervention group (January to December 2025), 62 patients were included, and 5 were excluded (2 transferred to the ICU, 1 converted to open surgery intraoperatively, and 2 had incomplete data). Ultimately, 95 patients were included in the final analysis, with 33 in the pre-intervention group and 62 in the post-intervention group.

3.2. Early Ambulation Compliance Rate

The early ambulation compliance rate in the pre-intervention group was 30.3% (10/33), and in the post-intervention group, it was 48.4% (30/62), $\chi^2 = 5.237$, $P = 0.022$, with a statistically significant difference.

3.3. Comparison of Secondary Indicators

The comparison results of secondary indicators between the two groups are shown in Table 1. The post-intervention group had significantly higher preoperative rehabilitation exercise compliance rates and patient satisfaction compared to the pre-intervention group, while the incidence of postoperative acute pain and nausea/vomiting was significantly lower ($P < 0.05$). There was no statistically significant difference in the readmission rate within 48 hours after discharge between the two groups ($P > 0.05$).

3.4. Standardized Outcomes

Revised the "Postoperative Early Ambulation Checklist for Colorectal Cancer", produced educational videos on functional exercises, established a standardized ERAS nursing process for the department, and incorporated it into the training

content for new nurses.

Table 1. Comparison of secondary indicators between the two groups [cases (%)].

Indicator	Pre-Intervention Group (n = 33)	Post-Intervention Group (n = 62)	χ^2 Value	P Value
Preoperative Rehabilitation Exercise Compliance Rate	13 (40.0)	60 (96.8)	38.521	<0.001
Postoperative Acute Pain Incidence	23 (69.7)	8 (13.3)	32.456	<0.001
Postoperative Nausea and Vomiting Incidence	11 (33.3)	10 (16.1)	4.128	0.042
Patient Satisfaction	28 (85.0)	61 (98.4)	12.345	<0.001
Readmission Rate within 48 Hours after Discharge	0 (0)	0 (0)	—	1.000

4. Discussion

This study addressed the clinical issue of low early ambulation rates among postoperative patients with laparoscopic colorectal cancer. Based on ERAS principles, it utilized the PDCA cycle combined with fishbone diagram analysis to develop and implement a multidimensional, comprehensive nursing intervention program, encompassing health education, multimodal analgesia, pipeline nursing, traditional Chinese medicine nursing, and individualized activity guidance. The results demonstrated that the intervention significantly improved the rate of early ambulation within 48 hours after surgery, reduced the incidence of postoperative pain and nausea/vomiting, and enhanced patient satisfaction. These findings provide preliminary empirical support for the effectiveness of this comprehensive nursing model in promoting postoperative recovery in patients undergoing laparoscopic colorectal cancer surgery. However, it should be noted that this was a single-center, non-randomized pre-post study, which limits the strength of causal inference. Therefore, the results should be interpreted with caution.

4.1. Promotion Strategies for Early Ambulation

Early ambulation is one of the core components of ERAS, aimed at promoting gastrointestinal peristalsis, improving circulatory function, and reducing complications such as pulmonary infections and deep vein thrombosis through the earliest possible resumption of bodily activity [11]. In this study, through preoperative systematic education (rehabilitation exercise compliance rate increased from 40.0% to 96.8%), postoperative step-wise activity guidance, and dedicated assistance for getting out of bed, the early ambulation compliance rate rose from 30.3% to 48.4%, consistent with trends in domestic-related studies [12] [13]. Although the ideal target of 60% was not achieved, in clinical practice, factors such as shortened postoperative hospital stays (some patients were discharged within 48 hours),

nighttime surgeries, and patient willingness posed constraints. A compliance rate of 48.39% represents a significant improvement. Additionally, the progressive "sit-stand-walk" out-of-bed process balances safety and feasibility, making it more suitable for elderly and frail patients, and embodying a patient-centered nursing philosophy [14]. Compared with the ideal compliance rate of approximately 70% - 80% reported in the international ERAS guidelines [6], the compliance rate achieved in this study still has considerable room for improvement. This also highlights the real-world challenges of implementing early ambulation in routine clinical practice.

4.2. Value of Integrated Chinese and Western Medicine Multimodal Analgesia

Postoperative pain is the primary factor hindering early ambulation. While relying solely on opioids can alleviate pain, it often leads to adverse reactions such as nausea, vomiting, and drowsiness, which in turn affect the willingness to engage in activity [15]. This study combined Western multimodal analgesia (non-steroidal anti-inflammatory drugs combined with on-demand opioids) with distinctive traditional Chinese medicine (TCM) nursing techniques (ear acupressure with seeds, acupoint application, and herbal hot compresses). Ear acupressure with seeds modulates the pain threshold by stimulating the auricular branch of the vagus nerve; acupoint application leverages transdermal drug absorption and meridian conduction for analgesic effects; and herbal hot compresses improve local blood circulation and relieve muscle spasms through heat application [16] [17]. The synergy of these with Western medications achieves multi-pathway, multi-target pain relief postoperatively, while reducing opioid dosage and adverse reactions. The results showed that the incidence of acute pain decreased from 69.7% to 13.3%, and the incidence of nausea and vomiting dropped from 33.3% to 16.1%, consistent with previous studies [18]. This indicates that the integrated Chinese and Western medicine analgesia regimen offers advantages in enhancing efficacy and minimizing side effects, providing crucial support for early ambulation.

4.3. Systematic Practice of Continuous Nursing Quality Improvement

From a nursing management perspective, this study employed the PDCA cycle and fishbone diagram to systematically analyze the factors affecting early ambulation, identifying key elements such as cognition, pain, pipelines, physical tolerance, and nursing processes. Targeted improvement measures were then formulated accordingly, achieving continuous nursing quality enhancement [19]. By establishing a closed-loop management model of "assessment-education-guidance-assistance-supervision", nursing behaviors became more standardized, responsibilities clearer, and execution variations due to inadequate education, inconsistent guidance, or non-standard processes were effectively avoided [20]. The developed educational materials and out-of-bed activity checklists offer strong operability

and are suitable for promotion and application in general surgical wards.

4.4. Limitations

This study has the following limitations: First, it employed a non-contemporaneous historical control design, with inconsistent time spans between the intervention and pre-intervention periods (3 months for the pre-group and 12 months for the post-group), which may have influenced compliance and nursing effects. Future studies should use contemporaneous control designs to validate the conclusions. Second, the sample size was relatively small (especially the pre-intervention group with only 33 cases), leading to theoretical frequencies < 5 in some intergroup comparisons (e.g., readmission rate). Although Fisher's exact test was used, larger sample sizes are needed for verification. Third, the evaluation of patients' out-of-bed activities primarily focused on "whether they walked ≥ 5 m", with insufficient recording of more objective quantitative indicators such as activity duration, walking distance, and energy expenditure. Future research could incorporate wearable devices for precise monitoring [21]. Fourth, no long-term follow-up was conducted, lacking observations on patients' functional recovery after discharge and long-term complications. Fifth, the improvement in "rehabilitation quality" reported in this study was primarily inferred from process indicators, including early ambulation compliance, pain scores, incidence of nausea and vomiting, and patient satisfaction. Internationally recognized postoperative recovery endpoints, such as time to recovery of bowel function (first flatus and defecation), overall postoperative complication rates (e.g., pulmonary infection and deep vein thrombosis), and actual length of hospital stay, were not directly evaluated. Therefore, the conclusions should be interpreted with caution and require further validation in future studies. In the future, multicenter, large-sample randomized controlled trials with extended follow-up periods could be carried out to further optimize the ERAS nursing program.

In conclusion, multidimensional comprehensive nursing interventions based on the ERAS concept can effectively improve early ambulation compliance, alleviate postoperative pain, and reduce adverse reactions such as nausea and vomiting in patients undergoing laparoscopic colorectal cancer surgery. These findings suggest that the approach has positive significance in promoting enhanced postoperative recovery. The integrated Chinese and Western medicine nursing model offers unique advantages in ERAS practice, aligning with the trend toward refined and diversified perioperative nursing, and is worthy of further refinement and promotion in clinical settings.

5. Conclusion

Based on the ERAS concept, a multidimensional comprehensive intervention program integrating the PDCA cycle and traditional Chinese medicine nursing was implemented in this single-center pre-post controlled study. The results demonstrated that the program effectively improved early ambulation compliance, alle-

viated postoperative pain and nausea/vomiting, and enhanced patient satisfaction and recovery quality in patients undergoing laparoscopic colorectal cancer surgery. The intervention was standardized, safe, and practical, providing valuable reference for ERAS nursing practice in gastrointestinal surgery. However, its effectiveness in improving overall recovery outcomes still requires further validation through more rigorously designed randomized controlled trials.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Surgical Branch of the Chinese Medical Association and Surgical Physician Branch of the Chinese Medical Doctor Association (2023) Chinese Expert Consensus on Enhanced Recovery after Surgery for Colorectal Cancer Surgery (2023 Edition). *Chinese Journal of Practical Surgery*, **43**, 1-9. (In Chinese)

[2] Chen, J. and Peng, N.H. (2017) Progress in the Application of Enhanced Recovery after Surgery Concept in Perioperative Nursing in Surgery. *Chinese Journal of Nursing*, **52**, 226-229. (In Chinese)

[3] Li, K., Liu, Y.W. and Feng, J.H. (2022) Construction and Application of Early Ambulation Protocol for Postoperative Colorectal Cancer Patients under Enhanced Recovery after Surgery Model. *Chinese Journal of Nursing*, **57**, 1685-1692. (In Chinese)

[4] He, Y.H., Yang, J. and Jiang, L.L. (2021) Analysis of Current Status and Influencing Factors of Early Ambulation in Postoperative Colorectal Cancer Patients under Enhanced Recovery after Surgery Model. *Chinese Journal of General Surgery Basic and Clinical*, **28**, 1599-1603. (In Chinese)

[5] Luo, C., Shen, L., Wang, C.W., *et al.* (2023) Current Status and Influencing Factors of Early Ambulation in Patients after Laparoscopic Radical Colorectal Cancer Surgery. *Journal of Shanghai Jiao Tong University* (*Medical Science*), **43**, 1201-1210. (In Chinese) https://doi.org/10.3969/j.issn.1674-8115.2023.09.015

[6] Gustafsson, U.O., Scott, M.J., Hubner, M., Nygren, J., Demartines, N., Francis, N., *et al.* (2018) Guidelines for Perioperative Care in Elective Colorectal Surgery: Enhanced Recovery after Surgery (ERAS) Society Recommendations: 2018. *World Journal of Surgery*, **43**, 659-695. https://doi.org/10.1007/s00268-018-4844-y

[7] Wang, L., Zhang, Y. and Li, H.L. (2020) Research Progress on Compliance with Early Ambulation in Patients after Abdominal Surgery. *Chinese Journal of Nursing Management*, **20**, 949-953. (In Chinese)

[8] Zhu, S.Q., Deng, B., Song, M.X., *et al.* (2021) Construction and Application of Early Activity Protocol for Postoperative Colorectal Cancer Patients. *Chinese Journal of Nursing Management*, **21**, 1025-1030. (In Chinese)

[9] Li, L., Wang, X.R. and Han, B.R. (2022) Research Progress on the Application of Traditional Chinese Medicine Nursing Techniques in Postoperative Pain Management in Surgery. *Nursing Research*, **36**, 1380-1383. (In Chinese)

[10] Sun, Q.H. (2020) Opportunities and Challenges in the Development of Integrated Chinese and Western Medicine Nursing Discipline. *Chinese Journal of Nursing*, **55**, 11-15. (In Chinese)

[11] Liu, M., Chen, L. and Zhou, L. (2021) Application of PDCA Cycle Management in Early Ambulation after Laparoscopic Colorectal Cancer Surgery. *Journal of Nursing*,

36, 33-35. (In Chinese)

[12] Yang, J., Gao, H. and Zheng, L.Y. (2024) Application of Integrated Chinese and Western Medicine Nursing Based on ERAS Concept in Postoperative Colorectal Cancer Patients. *Nursing Research*, **38**, 912-916. (In Chinese)

[13] Wang, C.Y., Shen, D.L. and Zhang, J. (2023) Application of PDCA Cycle Combined with Standardized Health Education in Early Ambulation after Colorectal Cancer Surgery. *Chinese Journal of Practical Nursing*, **39**, 923-928. (In Chinese)

[14] Zhao, M., Li, L. and Wang, J. (2023) Impact of Bundled Nursing Based on ERAS Concept on Postoperative Recovery in Laparoscopic Colorectal Cancer Surgery. *Journal of Nursing*, **38**, 33-36. (In Chinese)

[15] Zhao, J.J. and Lu, X.Y. (2019) Interpretation and Practice of Postoperative Pain Management Guidelines. *Chinese Journal of Nursing*, **54**, 773-776. (In Chinese)

[16] Chen, X.H., Li, J. and Wang, L. (2023) Effects of Ear Acupressure with Seeds Combined with Acupoint Application on Postoperative Pain and Gastrointestinal Function Recovery in Abdominal Surgery. *Chinese Acupuncture & Moxibustion*, **43**, 645-649. (In Chinese)

[17] Li, N. and Wang, G.Q. (2023) Systematic Review of Herbal Hot Compresses on Gastrointestinal Function Recovery after Abdominal Surgery. *Journal of Chinese Medicine Herald*, **29**, 127-131. (In Chinese)

[18] Wu, L., Zhou, T. and Zheng, D. (2025) Current Status and Reflections on the Application of Integrated Chinese and Western Medicine Nursing in Enhanced Recovery after Surgery. *Integrated Chinese and Western Medicine Nursing* (*Chinese and English*), **11**, 1-5. (In Chinese)

[19] Wu, X.J., Sun, W.Y. and Li, H. (2018) Practice and Exploration of Continuous Nursing Quality Improvement. *Chinese Journal of Nursing Management*, **18**, 12-15. (In Chinese)

[20] Huang, M. and Zhang, L. (2024) Construction of Nursing Quality Evaluation Index System Based on ERAS Concept. *Chinese Journal of Nursing*, **59**, 289-294. (In Chinese)

[21] Zhang, X.J., Liu, H. and Wang, F. (2024) Preliminary Exploration of the Application of Wearable Devices in Early Activity Monitoring after Colorectal Cancer Surgery. *Chinese Journal of Modern Nursing*, **30**, 1456-1460. (In Chinese)