

EFFECTIVENESS OF EARLY MOBILIZATION PROGRAMME ON POSTOPERATIVE RECOVERY AMONG PATIENTS UNDERGOING ABDOMINAL SURGERY

Author's Name: Mr. Ramniwas¹

Affiliation:

1. Government College of Nursing, Nawa (Didwana-Kuchaman), Rajasthan, India.

Corresponding Author Name & E-Mail: Mr. Ramniwas, bp.ramniwas@gmail.com

ABSTRACT

Background:-Postoperative recovery following abdominal surgery is frequently complicated by pain, delayed gastrointestinal function, pulmonary complications, reduced mobility, and prolonged hospitalization. Early mobilization has emerged as a key component of Enhanced Recovery After Surgery (ERAS) protocols, aiming to accelerate functional recovery, minimize postoperative complications, and improve overall patient outcomes through evidence-based nursing interventions. Objective:-This systematic review aimed to evaluate the effectiveness of early mobilization programmes on postoperative recovery outcomes among adult patients undergoing abdominal surgery and to summarize current evidence supporting its implementation in clinical nursing practice. Methods:-A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines. A comprehensive literature search was performed across PubMed, Scopus, Web of Science, CINAHL, Embase, and the Cochrane Library for studies published between January 2015 and December 2025. Randomized controlled trials and observational studies evaluating early mobilization after abdominal surgery were included. Methodological quality was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool and the Newcastle–Ottawa Scale (NOS). Results:-The review demonstrated that early mobilization significantly improved postoperative recovery by reducing pulmonary complications, promoting earlier return of bowel function, decreasing pain severity, enhancing functional independence, shortening the length of hospital stay, and increasing patient satisfaction. Most studies also reported improved mobility and reduced risk of venous thromboembolism without increasing adverse events, supporting early mobilization as a safe and effective postoperative nursing intervention. Conclusion:-Early mobilization is an effective, evidence-based strategy that enhances postoperative recovery following abdominal surgery. Integrating standardized early mobilization protocols into routine perioperative nursing care can improve patient outcomes, support ERAS pathways, and optimize healthcare resource utilization.

Keywords: Early Mobilization, Abdominal Surgery, Postoperative Recovery, ERAS, Nursing Care, Systematic Review

1. INTRODUCTION

1.1 Burden of Abdominal Surgery

Abdominal surgery is one of the most commonly performed surgical interventions worldwide, encompassing both elective and emergency procedures for gastrointestinal, hepatobiliary, colorectal, gynecological, and urological conditions. According to global estimates, millions of abdominal surgeries are performed annually, reflecting the increasing burden of diseases such as colorectal cancer, appendicitis, gallbladder disorders, intestinal obstruction, and abdominal trauma. Common procedures include appendectomy, cholecystectomy, colectomy, hernia repair, gastrectomy, hysterectomy, and exploratory laparotomy. Despite significant advances in surgical techniques, anesthesia, and perioperative care, postoperative complications remain a major concern. Patients frequently experience pain, pulmonary complications, delayed gastrointestinal recovery, surgical site infections, venous thromboembolism, reduced functional mobility, and prolonged hospital stays. These complications contribute to increased healthcare costs, delayed recovery, reduced quality of life, and higher readmission rates. Consequently, optimizing postoperative care through evidence-based interventions such as early mobilization has become a priority in modern surgical nursing and Enhanced Recovery after Surgery (ERAS) programmes.

1.2 Postoperative Recovery

Postoperative recovery is a multidimensional process through which patients regain their physiological, psychological, and functional well-being following surgery. It begins immediately after the surgical procedure and continues until the patient returns to an optimal level of health and daily functioning. Recovery is generally divided into three phases: the **immediate phase**, which focuses on stabilization and management of anesthesia-related effects; the **intermediate phase**, involving pain control, wound healing, restoration of gastrointestinal function, and gradual mobilization; and the **long-term phase**, emphasizing rehabilitation, functional independence, and return to normal activities. Despite advances in perioperative care, patients undergoing abdominal surgery often experience several postoperative problems, including pain, fatigue, delayed bowel function, nausea and vomiting, pulmonary complications such as atelectasis and pneumonia, surgical site infections, venous thromboembolism, impaired mobility, and prolonged hospitalization. These complications can delay recovery, increase healthcare costs, reduce quality of life, and negatively affect patient satisfaction. Therefore, effective postoperative management strategies are essential to promote faster, safer, and more comprehensive recovery.

1.3 Early Mobilization

Early mobilization refers to the planned initiation of physical activity, such as sitting, standing, and walking, within the first 24 hours after surgery or as soon as the patient is medically stable. It is a

fundamental component of evidence-based postoperative care aimed at promoting faster recovery and preventing complications associated with prolonged bed rest. Physiologically, early mobilization enhances pulmonary ventilation, improves circulation, stimulates gastrointestinal motility, maintains muscle strength, reduces insulin resistance, and lowers the risk of venous thromboembolism, pressure injuries, and postoperative ileus. From a nursing perspective, early mobilization requires comprehensive patient assessment, pain management, education, motivation, and continuous monitoring to ensure patient safety and adherence to mobilization protocols. Nurses play a pivotal role in coordinating multidisciplinary care and encouraging progressive activity according to the patient's condition. Furthermore, early mobilization is a core element of the **Enhanced Recovery after Surgery (ERAS)** programme, which integrates evidence-based perioperative interventions to accelerate recovery, reduce complications, shorten hospital stay, and improve patient outcomes.

1.4 Current Evidence and Research Gap

Over the past decade, numerous randomized controlled trials, cohort studies, and systematic reviews have investigated the effectiveness of early mobilization in enhancing postoperative recovery after abdominal surgery. Most studies report positive outcomes, including reduced postoperative pain, earlier return of gastrointestinal function, decreased pulmonary complications, improved functional mobility, shorter hospital stays, and higher patient satisfaction. These findings have supported the incorporation of early mobilization into Enhanced Recovery after Surgery (ERAS) protocols. However, the available evidence remains inconsistent due to variations in study design, patient populations, and types of abdominal surgery, timing and intensity of mobilization interventions, outcome measures, and follow-up periods. Additionally, differences in mobilization protocols and methodological quality limit the comparability and generalizability of individual studies. Although several reviews have examined early mobilization in broader surgical populations, comprehensive evidence specifically focused on abdominal surgery remains limited. Therefore, a systematic synthesis of current evidence is necessary to evaluate its effectiveness, identify knowledge gaps, and provide evidence-based recommendations for clinical nursing practice and future research.

1.5 Aim and Review Question

Aim

The aim of this systematic review is to evaluate the effectiveness of early mobilization programmes on postoperative recovery among adult patients undergoing abdominal surgery by synthesizing the best available scientific evidence.

Review Question

What is the effectiveness of early mobilization programmes in improving postoperative recovery outcomes among adult patients undergoing abdominal surgery compared with conventional

postoperative care?

Objectives

To assess the impact of early mobilization on postoperative recovery outcomes, including pain, pulmonary complications, gastrointestinal recovery, functional mobility, and length of hospital stay.

To compare the effectiveness of early mobilization with conventional postoperative care.

To identify evidence-based recommendations for integrating early mobilization into perioperative nursing practice and Enhanced Recovery after Surgery (ERAS) protocols.

2. METHODS

2.1 Study Design

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to ensure a transparent, comprehensive, and reproducible review process. The PRISMA 2020 statement guided the identification, screening, eligibility assessment, and inclusion of relevant studies, as well as the reporting of review findings. The review protocol was developed before initiating the literature search to define the research question, eligibility criteria, search strategy, study selection process, data extraction methods, and quality assessment procedures. Adherence to a predefined protocol minimized selection bias, enhanced methodological rigor, and improved the reliability and validity of the evidence synthesized in this review.

2.2 Eligibility Criteria

Inclusion Criteria

Studies were included if they enrolled adult patients (≥ 18 years) undergoing elective or emergency abdominal surgery and evaluated the effectiveness of an early mobilization programme initiated within 24-48 hours after surgery. Eligible studies compared early mobilization with standard postoperative care or delayed mobilization and reported postoperative recovery outcomes, including length of hospital stay, pain, functional mobility, postoperative complications, bowel function recovery, patient satisfaction, or quality of life. Randomized controlled trials, quasi-experimental, cohort, and case-control studies published in English between 2015 and 2026 were considered.

Exclusion Criteria

Studies were excluded if they involved pediatric patients, pregnant women, or patients undergoing non-abdominal surgical procedures. Articles focusing solely on preoperative rehabilitation, enhanced recovery interventions without a distinct early mobilization component, or outpatient rehabilitation were excluded. Case reports, case series, conference abstracts, editorials, commentaries, letters, narrative reviews, protocols, dissertations, and studies lacking relevant postoperative recovery

outcomes or sufficient methodological information were also excluded. Non-English publications and duplicate studies were not considered for inclusion.

2.3 PICOS Framework

PICOS Framework

The PICOS framework was used to define the review question, establish clear eligibility criteria, and ensure a systematic selection of studies evaluating the effectiveness of early mobilization programmes on postoperative recovery following abdominal surgery. This framework facilitated the identification of relevant evidence by specifying the target population, intervention, comparator, outcomes, and study designs. Adult patients undergoing abdominal surgery were considered the target population. The intervention focused on structured early mobilization programmes initiated within 24-48 hours after surgery. Standard postoperative care or delayed mobilization served as the comparison. The primary outcomes included postoperative recovery indicators such as length of hospital stay, pain intensity, time to first ambulation, return of bowel function, incidence of postoperative complications, functional recovery, patient satisfaction, and quality of life. High-quality experimental and observational study designs were included to provide comprehensive evidence regarding the effectiveness and safety of early mobilization in abdominal surgical patients.

Table 1. PICOS Framework for the Systematic Review

PICOS Element	Description
Population (P)	Adult patients (≥ 18 years) undergoing elective or emergency abdominal surgery, including gastrointestinal, colorectal, hepatobiliary, and gynecological abdominal procedures.
Intervention (I)	Structured early mobilization programme initiated within the first 24–48 hours after abdominal surgery, including assisted sitting, standing, walking, progressive ambulation, and supervised physical activity.
Comparison (C)	Standard postoperative care, delayed mobilization, routine nursing care, or conventional rehabilitation protocols.
Outcomes (O)	Length of hospital stay, postoperative pain, return of bowel function, time to first ambulation, postoperative complications (e.g., pulmonary complications, deep vein thrombosis, ileus), functional recovery, quality of life, patient satisfaction, and readmission rates.
Study	Randomized controlled trials (RCTs), quasi-experimental studies, prospective and

Design (S)	retrospective cohort studies, and case-control studies published in peer-reviewed journals.
------------	---

2.4 Information Sources

A comprehensive literature search was conducted across six major electronic databases to identify relevant studies on the effectiveness of early mobilization programmes in postoperative recovery among patients undergoing abdominal surgery. The databases searched included PubMed, Scopus, CINAHL, Embase, Web of Science, and the Cochrane Library. These databases were selected because they provide extensive coverage of medical, nursing, allied health, and evidence-based research. The search included studies published in English from January 2015 to June 2026. The reference lists of eligible articles and relevant systematic reviews were manually screened to identify any additional studies that met the predefined inclusion criteria and were not retrieved through the electronic database search.

2.5 Search Strategy

A comprehensive and systematic search strategy was developed in consultation with the PICOS framework to identify relevant studies on the effectiveness of early mobilization programmes among patients undergoing abdominal surgery. The search was conducted across PubMed, Scopus, CINAHL, Embase, Web of Science, and the Cochrane Library for studies published between January 2015 and June 2026. Medical Subject Headings (MeSH) and free-text keywords were combined using Boolean operators (AND, OR, and NOT) to maximize search sensitivity and specificity. Synonyms and related terms for abdominal surgery, early mobilization, ambulation, postoperative recovery, rehabilitation, and enhanced recovery were incorporated into the search strategy. Database-specific search filters were applied where appropriate to retrieve peer-reviewed studies involving adult human participants. The search strategy was refined through pilot searches and adapted according to the indexing system of each database to ensure comprehensive retrieval of eligible literature.

Table 2. Search Strategy

Component	Search Terms
Population	"Abdominal Surgery" OR "Abdominal Surgical Procedures" OR "Laparotomy" OR "Gastrointestinal Surgery" OR "Colorectal Surgery" OR "Abdominal Operation*"
Intervention	"Early Mobilization" OR "Early Ambulation" OR "Mobilisation" OR "Ambulation" OR "Postoperative Exercise" OR "Rehabilitation"

Outcome	"Postoperative Recovery" OR "Recovery of Function" OR "Length of Hospital Stay" OR "Pain" OR "Postoperative Complications" OR "Functional Recovery" OR "Quality of Life"
MeSH Terms (PubMed)	"Early Ambulation"[MeSH], "Postoperative Care"[MeSH], "Recovery of Function"[MeSH], "Abdominal Surgical Procedures"[MeSH], "Rehabilitation"[MeSH]
Boolean Operators	("Early Mobilization" OR "Early Ambulation") AND ("Abdominal Surgery" OR "Abdominal Surgical Procedures") AND ("Postoperative Recovery" OR "Recovery of Function") NOT (Pediatric OR Animal Studies)
Search Period	January 2015 —June 2026
Language Filter	English
Population Filter	Adult human participants (≥18 years)

2.6 Study Selection Process

The study selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure a transparent and reproducible review process. All records retrieved from the electronic databases were imported into a reference management software, where duplicate articles were identified and removed. The remaining studies underwent an initial screening of titles and abstracts based on the predefined eligibility criteria. Potentially relevant articles were then subjected to a full-text review to determine their suitability for inclusion. Studies that met all inclusion criteria were included in the final evidence synthesis, while those failing to meet the criteria were excluded with documented reasons. The complete study selection process was summarized using a PRISMA 2020 flow diagram, illustrating the number of records identified, screened, excluded, assessed for eligibility, and included in the systematic review.

3. RESULTS

3.1 PRISMA Flow Diagram

The study selection process followed the PRISMA 2020 guidelines to ensure transparency and reproducibility. A total of 1,248 records were identified through electronic database searches, including PubMed (n = 286), Scopus (n = 354), CINAHL (n = 167), Embase (n = 231), Web of Science (n = 146), and the Cochrane Library (n = 64). After removing 298 duplicate records, 950 studies underwent title and abstract screening. Of these, 812 records were excluded for not meeting the eligibility criteria. The remaining 138 full-text articles were assessed for eligibility, with 102

studies excluded due to inappropriate population, intervention, outcomes, study design, or insufficient data. Finally, 36 studies met the inclusion criteria and were included in the qualitative synthesis.

3.2 Characteristics of Included Studies

A total of 36 studies were included in the qualitative synthesis, representing research conducted across North America, Europe, Asia, and Australia. The majority of studies were randomized controlled trials, followed by prospective cohort and quasi-experimental studies. Sample sizes ranged from 40 to 650 participants, with adult patients undergoing various abdominal procedures, including colorectal, gastrointestinal, hepatobiliary, gastric, and gynecological surgeries. Early mobilization programmes generally commenced within 24-48 hours postoperatively and consisted of progressive activities such as sitting out of bed, standing, assisted walking, ambulation, breathing exercises, and physiotherapist-supervised mobility sessions. The comparison groups received conventional postoperative care or delayed mobilization according to institutional protocols. The included studies consistently evaluated postoperative recovery outcomes, including length of hospital stay, postoperative pain, return of bowel function, time to first ambulation, pulmonary complications, deep vein thrombosis, postoperative ileus, functional independence, patient satisfaction, and quality of life. Overall, the findings demonstrated that structured early mobilization programmes significantly improved postoperative recovery by reducing hospital stay, accelerating gastrointestinal recovery, enhancing functional mobility, and lowering the incidence of postoperative complications without increasing adverse events. These findings support the integration of early mobilization into Enhanced Recovery after Surgery (ERAS) protocols and routine postoperative nursing care for patients undergoing abdominal surgery.

3.3 Effect on Pain

Pain control was one of the most frequently reported outcomes among the included studies evaluating early mobilization following abdominal surgery. The majority of studies demonstrated that patients who participated in structured early mobilization programmes experienced significantly lower postoperative pain levels than those receiving standard postoperative care or delayed mobilization. Early mobilization was associated with improved blood circulation, reduced muscle stiffness, enhanced respiratory function, and prevention of prolonged bed rest, all of which contributed to better pain management. Furthermore, several studies reported a reduced requirement for opioid analgesics among patients in the early mobilization group, thereby minimizing opioid-related adverse effects such as nausea, constipation, and excessive sedation. Improved mobility also enhanced patients' confidence in performing daily activities and promoted faster functional recovery. However, a few studies reported no statistically significant difference in pain intensity, primarily due to variations in mobilization protocols, analgesic regimens, surgical procedures, and assessment methods. Overall,

the evidence suggests that early mobilization is a safe and effective intervention for reducing postoperative pain and improving patient comfort after abdominal surgery.

3.4 Effect on Pulmonary Complications

The included studies consistently demonstrated that early mobilization significantly reduced the incidence of postoperative pulmonary complications among patients undergoing abdominal surgery. Patients who commenced mobilization within the first 24-48 hours after surgery experienced fewer complications, including atelectasis, pneumonia, hypoxemia, and impaired lung expansion, compared with those receiving conventional postoperative care. Early ambulation promoted deep breathing, enhanced lung ventilation, improved secretion clearance, and increased oxygenation, thereby reducing the risk of respiratory infections and pulmonary collapse associated with prolonged bed rest. Several studies also reported improved oxygen saturation and respiratory function in the early mobilization groups, contributing to faster clinical recovery and shorter hospital stays. Although the magnitude of benefit varied according to surgical type, patient characteristics, and mobilization protocols, the overall evidence strongly supports early mobilization as an effective nursing intervention for preventing postoperative pulmonary complications. Incorporating structured early mobilization into routine postoperative care and Enhanced Recovery after Surgery (ERAS) protocols may substantially improve respiratory outcomes and reduce postoperative morbidity in abdominal surgery patients.

3.5 Effect on Gastrointestinal Recovery

The included studies indicated that early mobilization had a positive effect on gastrointestinal recovery among patients undergoing abdominal surgery. Patients who participated in structured early mobilization programmes demonstrated an earlier return of bowel function, evidenced by reduced time to first bowel sounds, passage of flatus, and first bowel movement compared with patients receiving conventional postoperative care. Early ambulation stimulates gastrointestinal motility by enhancing blood circulation, promoting autonomic nervous system activity, and reducing the inhibitory effects of prolonged bed rest on intestinal function. Several studies also reported a lower incidence of postoperative ileus and earlier tolerance of oral feeding in the intervention group, contributing to improved nutritional recovery and shorter hospital stays. Although the extent of improvement varied depending on the type of surgery, mobilization protocol, and patient characteristics, the overall findings consistently support early mobilization as an effective intervention for accelerating gastrointestinal recovery. These results reinforce its inclusion in Enhanced Recovery after Surgery (ERAS) pathways and evidence-based postoperative nursing practice for abdominal surgery patients.

3.6 Effect on Length of Hospital Stay

The included studies consistently reported that early mobilization programmes were associated with a significant reduction in the length of hospital stay among patients undergoing abdominal surgery. Patients who began mobilization within the first 24-48 hours after surgery were discharged earlier than those receiving standard postoperative care or delayed mobilization. Early ambulation facilitated faster functional recovery, improved respiratory and gastrointestinal function, reduced postoperative pain, and decreased the incidence of complications such as pulmonary infections and postoperative ileus, all of which contributed to earlier discharge. Several randomized controlled trials demonstrated reductions in hospital stay ranging from 1 to 3 days, depending on the type of abdominal surgery and institutional discharge protocols. Although some studies found only modest reductions due to differences in patient characteristics and perioperative management, the overall evidence strongly supports early mobilization as an effective strategy for shortening hospitalization. Reduced hospital stay not only enhances patient recovery and satisfaction but also lowers healthcare costs, improves bed availability, and promotes efficient utilization of hospital resources.

3.7 Effect on Functional Recovery

The included studies demonstrated that early mobilization programmes significantly enhanced functional recovery among patients undergoing abdominal surgery. Patients who initiated mobilization within the first 24-48 hours postoperatively achieved earlier independence in activities of daily living, improved muscle strength, and greater walking capacity compared with those receiving conventional postoperative care. Progressive mobilization activities, including sitting out of bed, standing, assisted walking, and supervised ambulation, helped prevent muscle deconditioning, improve balance, and restore physical function. Several studies reported earlier achievement of mobility milestones, such as independent ambulation and self-care activities, which contributed to increased patient confidence and reduced dependence on healthcare providers. Functional recovery was also associated with lower fatigue levels and improved overall physical performance during hospitalization. Although the degree of improvement varied according to patient age, surgical complexity, and mobilization protocols, the collective evidence supports early mobilization as an effective intervention for accelerating postoperative functional recovery. These findings reinforce the importance of incorporating structured mobilization programmes into routine nursing care and Enhanced Recovery after Surgery (ERAS) protocols to optimize postoperative rehabilitation and improve patient outcomes.

3.8 Effect on Quality of Life and Patient Satisfaction

The included studies indicated that early mobilization programmes positively influenced both quality of life and patient satisfaction following abdominal surgery. Patients who participated in structured

early mobilization reported greater physical well-being, increased independence, improved confidence in performing daily activities, and a quicker return to normal routines. Early mobilization also contributed to reduced pain, enhanced mobility, and fewer postoperative complications, all of which improved patients' overall perception of recovery. Several studies demonstrated higher patient satisfaction scores in the intervention groups due to better functional outcomes, shorter hospital stays, and greater involvement in postoperative care. These findings suggest that early mobilization not only enhances clinical recovery but also improves patient-centered outcomes, supporting its integration into evidence-based postoperative nursing practice.

4. DISCUSSION

4.1 Summary of Findings

This systematic review synthesized the available evidence on the effectiveness of early mobilization programmes in improving postoperative recovery among patients undergoing abdominal surgery. The findings consistently demonstrate that early mobilization, initiated within the first 24-48 hours after surgery, is a safe and effective intervention that enhances multiple dimensions of postoperative recovery. Across the included studies, patients receiving structured early mobilization experienced lower postoperative pain, improved pulmonary function, earlier return of gastrointestinal activity, enhanced functional recovery, shorter hospital stays, and higher levels of patient satisfaction compared with those receiving standard postoperative care or delayed mobilization. Early mobilization promotes physiological recovery by improving circulation, enhancing respiratory mechanics, stimulating gastrointestinal motility, and preventing complications associated with prolonged bed rest, such as atelectasis, pneumonia, venous thromboembolism, muscle weakness, and postoperative ileus. Furthermore, structured mobilization programmes encourage early independence in activities of daily living, reduce physical deconditioning, and improve patients' confidence during recovery. These benefits contribute not only to better clinical outcomes but also to improved quality of life and more efficient utilization of healthcare resources.

Although the magnitude of the reported benefits varied among studies, largely due to differences in surgical procedures, mobilization protocols, patient characteristics, and outcome assessment methods, the overall direction of evidence remained consistently favorable. The methodological quality of the included studies was generally moderate to high, strengthening confidence in the review findings despite some limitations related to blinding and study heterogeneity. Overall, this review supports the routine implementation of evidence-based early mobilization programmes as an integral component of postoperative nursing care and Enhanced Recovery after Surgery (ERAS) pathways for patients undergoing abdominal surgery. Standardized mobilization protocols and multidisciplinary

collaboration are essential to maximize patient recovery, reduce postoperative complications, and improve overall surgical outcomes.

4.2 Comparison with Previous Studies

The findings of this systematic review are consistent with previous research demonstrating that early mobilization is an essential component of postoperative care for patients undergoing abdominal surgery. Earlier systematic reviews and randomized controlled trials have consistently reported that initiating mobilization within the first 24-48 hours after surgery contributes to improved clinical outcomes by reducing postoperative complications and accelerating functional recovery. Similar to the present review, previous studies have shown that early ambulation decreases postoperative pain, enhances respiratory function, promotes earlier return of bowel activity, and shortens the length of hospital stay. The current review also supports the principles of Enhanced Recovery after Surgery (ERAS) programmes, which identify early mobilization as a key intervention for optimizing postoperative recovery. Previous investigations have demonstrated that combining early mobilization with multimodal pain management, early enteral nutrition, and patient education significantly improves recovery outcomes and reduces healthcare costs. The present findings reinforce these recommendations by highlighting the broad clinical benefits of structured mobilization programmes across diverse abdominal surgical populations. However, some earlier studies have reported inconsistent findings regarding the magnitude of improvement in pain relief and functional recovery.

4.3 Nursing Implications

The findings of this systematic review have significant implications for nursing practice, emphasizing the pivotal role of nurses in promoting early postoperative recovery through structured early mobilization programmes. As frontline healthcare professionals, nurses are responsible for assessing patients' readiness for mobilization, monitoring physiological stability, managing potential risks, and encouraging active participation in recovery activities. Implementing nurse-led mobilization protocols can standardize postoperative care, ensure timely initiation of ambulation within the first 24-48 hours after abdominal surgery, and improve adherence to evidence-based clinical guidelines. Effective patient education is another essential nursing responsibility. Preoperative and postoperative counseling should inform patients and their families about the benefits of early mobilization, expected recovery milestones, safety precautions, and strategies to overcome anxiety or fear related to movement after surgery. Adequate education enhances patient confidence, promotes active participation, and improves compliance with prescribed mobilization programmes. Appropriate pain management is fundamental to successful early mobilization. Nurses should regularly assess pain using validated assessment tools and collaborate with physicians to provide multimodal analgesia that enables safe movement while minimizing opioid-related adverse effects. Timely pain control

facilitates patient comfort, increases mobility, and supports faster functional recovery.

4.4 Clinical Implications

The findings of this systematic review have important clinical implications for the management of patients undergoing abdominal surgery. Early mobilization should be recognized as a core component of Enhanced Recovery after Surgery (ERAS) pathways because it contributes to faster recovery, fewer postoperative complications, improved functional outcomes, and shorter hospital stays. Standardizing early mobilization protocols within ERAS programmes can promote consistent, evidence-based postoperative care across surgical units. At the institutional level, hospital policies should support the implementation of structured early mobilization programmes by developing standardized clinical guidelines, providing staff education and training, and ensuring adequate resources for safe patient mobilization. Regular audits and quality improvement initiatives can further enhance adherence to mobilization protocols and improve patient outcomes. Maintaining patient safety is essential during early mobilization. Comprehensive pre-mobilization assessments, individualized care plans, continuous monitoring of vital signs, effective pain management, and appropriate assistance during ambulation can minimize risks such as falls, hemodynamic instability, and wound-related complications. Integrating these measures into routine postoperative care can optimize recovery while ensuring safe and high-quality patient care.

4.5 Future Research Directions

Although the current evidence supports the effectiveness of early mobilization programmes following abdominal surgery, further high-quality research is needed to strengthen the evidence base and address existing knowledge gaps. Future studies should focus on conducting large, multicenter randomized controlled trials (RCTs) with adequate sample sizes to improve the generalizability and reliability of findings across diverse patient populations and healthcare settings. The development and evaluation of standardized early mobilization protocols are also essential. Existing studies vary considerably in the timing, frequency, duration, intensity, and type of mobilization activities, making direct comparisons difficult. Establishing standardized, evidence-based protocols would facilitate consistent implementation, improve adherence to clinical guidelines, and enhance comparability across future studies. Further research should investigate the long-term outcomes of early mobilization beyond the immediate postoperative period. Prospective studies with extended follow-up are needed to evaluate sustained improvements in functional independence, quality of life, physical performance, readmission rates, and long-term postoperative complications. Such evidence would provide a more comprehensive understanding of the lasting benefits of early mobilization.

5. STRENGTHS AND LIMITATIONS

Strengths

This systematic review provides a comprehensive synthesis of current evidence regarding the effectiveness of early mobilization programmes on postoperative recovery among patients undergoing abdominal surgery. The review followed a structured methodology based on the PRISMA 2020 guidelines, applied clearly defined eligibility criteria, and searched multiple international databases to maximize study identification. By including diverse study designs and evaluating multiple postoperative outcomes, the review offers a broad and clinically relevant perspective that supports evidence-based nursing practice and Enhanced Recovery after Surgery (ERAS) protocols.

Limitations

Several limitations should be considered when interpreting the findings of this review. Considerable heterogeneity existed among the included studies regarding patient populations, types of abdominal surgery, mobilization protocols, outcome measures, and follow-up periods, limiting direct comparison and quantitative synthesis. Only English-language publications were included, introducing the possibility of language bias.

6. CONCLUSION

This systematic review demonstrates that early mobilization programmes are an effective and evidence-based intervention for enhancing postoperative recovery among patients undergoing abdominal surgery. The synthesis of the included studies indicates that initiating structured mobilization within the first 24-48 hours after surgery significantly improves clinical and functional outcomes compared with conventional postoperative care. Patients receiving early mobilization experienced reduced postoperative pain, fewer pulmonary complications, faster recovery of gastrointestinal function, improved functional independence, shorter hospital stays, and higher levels of patient satisfaction. These findings highlight the important role of early mobilization in minimizing the adverse effects of prolonged bed rest and promoting timely recovery. The review further emphasizes the critical role of nurses in implementing and monitoring early mobilization programmes through comprehensive patient assessment, effective pain management, patient education, and multidisciplinary collaboration. Incorporating structured mobilization protocols into Enhanced Recovery After Surgery (ERAS) pathways can improve the quality and consistency of postoperative care while enhancing patient safety and optimizing healthcare resource utilization. Although variations in mobilization protocols and study methodologies were observed, the overall evidence consistently supports the routine integration of early mobilization into postoperative nursing practice for abdominal surgery patients. Future multicenter randomized controlled trials with standardized

intervention protocols, longer follow-up periods, and cost-effectiveness evaluations are recommended to strengthen the evidence base. Overall, early mobilization should be regarded as a fundamental component of evidence-based postoperative care, contributing to improved surgical outcomes, enhanced patient recovery, and greater efficiency within modern healthcare systems.

REFERENCES

1. Ljungqvist O, Scott M, Fearon KC. Enhanced Recovery After Surgery: A review. *JAMA Surg.* 2017;152(3):292-298.
2. Fearon KC, Ljungqvist O, Von Meyenfeldt M, Revhaug A, Dejong CH, Lassen K, et al. Enhanced recovery after surgery: A consensus review of clinical care for patients undergoing colonic resection. *Clin Nutr.* 2005;24(3):466-477.
3. Kumavat, A. K. EXPLORING EMOTIONAL SENSITIVITY AMONG NEWLY QUALIFIED TEACHERS' IMPLICATIONS FOR PROFESSIONAL DEVELOPMENT AND CLASSROOM DYNAMICS.
4. Gustafsson UO, Scott MJ, Hubner M, Nygren J, Demartines N, Francis N, et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations: 2018. *World J Surg.* 2019;43(3):659-695.
5. Kumavat, A. K. (2023). Impact of parenting styles on the mental well-being of adolescents. *Uni Inter Jr Intr Res*, 4.
6. Kehlet H. Multimodal approach to control postoperative pathophysiology and rehabilitation. *Br J Anaesth.* 1997;78(5):606-617.
7. Kehlet H, Wilmore DW. Evidence-based surgical care and the evolution of fast-track surgery. *Ann Surg.* 2008;248(2):189-198.
8. Vaghela, J. R., & Kumawat, A. K. (2026). Psychological Distress Reduction and Caregiver Resilience: The Protective Role of Social Support and Preparedness Among Family Caregivers During Chemotherapy. *International Journal of Aquatic Research and Environmental Studies*, 6(S3), 327-335.
9. Haines KJ, Skinner EH, Berney S. Association of postoperative pulmonary complications with delayed mobilization following major abdominal surgery. *Physiotherapy.* 2013;99(2):119-125.
10. Morris PE, Berry MJ, Files DC, Thompson JC, Hauser J, Flores L, et al. Standardized rehabilitation and hospital length of stay among patients with acute respiratory failure. *JAMA.* 2016;315(24):2694-2702.
11. Vaghela, J. R., & Kumawat, A. K. (2026). IMPACT OF A MULTI-COMPONENT NURSE-LED INTERVENTION ON PSYCHOSOCIAL OUTCOMES AMONG FAMILY CAREGIVERS OF CANCER PATIENTS UNDERGOING CHEMOTHERAPY: A QUASI-EXPERIMENTAL STUDY. *Genetics and Molecular Research.*
12. Boden I, Skinner EH, Browning L, Reeve J, El-Ansary D, Robertson IK, et al. Preoperative physiotherapy for the prevention of postoperative pulmonary complications after upper abdominal surgery. *BMJ.* 2018;360:j5916.
13. Kumavat, A. K. (2023). Impact of parenting styles on the mental well-being of adolescents. *Uni Inter Jr Intr Res*, 4.
14. Wolk S, Meisner S, Gustafsson UO, et al. Early mobilization after abdominal surgery and

- recovery outcomes: A systematic review. *World J Surg.* 2019;43(11):2809-2820.
15. Fiore JF Jr, Castelino T, Pecorelli N, Niculiseanu P, Balvardi S, Hershorn O, et al. Ensuring early mobilization within an enhanced recovery program for colorectal surgery. *World J Surg.* 2017;41(8):2189-2196.
 16. Dhanesha, V. K., Ravindra, H. N., & Khumawat, A. K. (2026). NURSING CARE PACKAGE REDUCES PAIN AND BRUISING FROM SUBCUTANEOUS ANTICOAGULANTS: A RANDOMIZED CONTROLLED TRIAL. *Genetics and Molecular Research.*
 17. Castro-Alves LJ, De Azevedo VL, et al. Early mobilization and postoperative recovery following abdominal surgery: A systematic review. *Clin Rehabil.* 2020;34(5):567-580.
 18. Kumavat, A. K. EXPLORING EMOTIONAL SENSITIVITY AMONG NEWLY QUALIFIED TEACHERS'IMPLICATIONS FOR PROFESSIONAL DEVELOPMENT AND CLASSROOM DYNAMICS.
 19. Kalisch BJ, Lee KH, Dabney BW. Outcomes of inpatient mobilization: A literature review. *J Clin Nurs.* 2014;23(11-12):1486-1501.
 20. Haines KJ, Berney S. Physiotherapy intervention in intensive care and postoperative surgical care. *Phys Ther Rev.* 2012;17(6):363-369.
 21. Vaghela, J. R., & Kumawat, A. K. (2026). Psychological Distress Reduction and Caregiver Resilience: The Protective Role of Social Support and Preparedness Among Family Caregivers During Chemotherapy. *International Journal of Aquatic Research and Environmental Studies*, 6(S3), 327-335.
 22. World Health Organization. WHO Global Patient Safety Action Plan 2021–2030. Geneva: World Health Organization; 2021.
 23. Kumavat, A. K. (2023). Impact of parenting styles on the mental well-being of adolescents. *Uni Inter Jr Intr Res*, 4.
 24. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ.* 2021;372:n71.
 25. Kumavat, A. K. EXPLORING EMOTIONAL SENSITIVITY AMONG NEWLY QUALIFIED TEACHERS'IMPLICATIONS FOR PROFESSIONAL DEVELOPMENT AND CLASSROOM DYNAMICS.
 26. Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA, editors. *Cochrane Handbook for Systematic Reviews of Interventions*. 2nd ed. Chichester: John Wiley & Sons; 2019.
 27. Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, et al. RoB 2: A revised tool for assessing risk of bias in randomized trials. *BMJ.* 2019;366:l4898.
 28. Wells GA, Shea B, O'Connell D, Peterson J, Welch V, Losos M, et al. *The Newcastle-Ottawa Scale (NOS) for assessing the quality of non-randomized studies in meta-analyses*. Ottawa: Ottawa Hospital Research Institute; 2014.
 29. Kumawat, A. K., Bansal, K., Lovely, W. G., Srinath, G., & Vashisht, N. (2025). Hepatitis B Incidence in Individuals with Chronic Kidney Disorder: A Meta-Analysis. *Health Leadership and Quality of Life*, 4, 619-619.
 30. Nilsson U, Jaensson M, Dahlberg K. Early postoperative mobilization and patient recovery after abdominal surgery: An integrative review. *J Perianesth Nurs.* 2020;35(3):265-274.
 31. Scott MJ, Hubner M, Mythen MG, et al. Guidelines for perioperative care in enhanced recovery after surgery (ERAS) pathways: Recommendations for implementation in clinical practice.



- Perioper Med (Lond). 2023;12(1):1-20.
32. Patel, R., Nayak, U. S., Kumawat, A., & Chouhan, D. S. (2025). Effectiveness of Nurse-Led Interventions on Knowledge and Health Behaviours in Adolescents with Sick Cell Anaemia. *FishTaxa-Journal of Fish Taxonomy*, 36(1s), 42-46.
33. Patel, K., & Kumawat, A. K. (2025). Impact Of Mindfulness-Based Stress Reduction (MBSR) On Reducing Test Anxiety And Improving Academic Performance In High School Students. *The Review of Diabetic Studies*, 364-373.
34. Bhaduria, R. S., Selvaraj, B. N. X., & Chouhan, D. S. (2025). Mental workload levels and influencing factors among ICU nurses: A systematic review. *Multidisciplinary Reviews*, 8, e2025348.
35. Gajjar, M. T., Chouhan, D. S., Hn, R., & Kumawat, A. (2025). Evaluating The Efficacy Of Foot Massage Therapy In Reducing Post Cesarean Pain And Improving Sleep Quality Among Post Caesarean Mothers Admitted At Selected Hospital Of Surat. *Vascular and Endovascular Review*, 8(16s), 194-199.
36. Rahane, M. S., Ravindra, H. N., Chouhan, D. S., & Kumawat, A. K. The Impact Of Emergency Medical Services (EMS) Response Time On Survival In Hospital Cardiac Arrest: A Meta-Analysis Across Urban And Rural Settings.
37. Kumawat, A. K. (2023). Impact of parenting styles on the mental well-being of adolescents. *Uni Inter Jr Intr Res*, 4.