

## Safe Approach to Frail Patients During the Surgical Process — a Systematic Review

### Bezpieczne podejście do pacjentów w podeszłym wieku podczas zabiegu chirurgicznego — przegląd systematyczny

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#### Abstract

The increasing percentage of the elderly population is a worldwide phenomenon that causes changes in the epidemiology of surgical patients, resulting in a growing number of frail patients who are more vulnerable to potential complications. Preoperative assessment must be comprehensive to correct reversible abnormalities and prevent adverse events. Establishing strategies and interventions aimed at mitigating risks and improving outcomes allows healthcare professionals to implement evidence-based practices to optimize patient safety. The aim of this manuscript is to analyze the safety of frail patients during the perioperative process and describe strategies to reduce risks and improve outcomes. Literature review conducted across various databases (PubMed, Scopus, SciELO, etc.). Selection criteria included terms such as “perioperative care”, “frail elderly”, surgery, and “postoperative complications”. Boolean operators AND and OR were utilized. According to all the reviewed studies, geriatric patients undergoing surgery require special care along with a comprehensive preoperative assessment due to their vulnerability. Collaboration among a multidisciplinary team and the development of evidence-based protocols are crucial for maximizing safety. Proper anesthesia management, temperature regulation, optimization of fluid balance, and meticulous monitoring of vital signs, among other factors, are essential for ensuring patient safety. The elderly patient undergoing surgery presents unique characteristics that require special considerations to ensure comprehensive care tailored to their needs, reducing additional risk factors. It is important to consider their fragility and their capacity for recovery. (JNNN 2024;13(2):85–89)

**Key Words:** complications, elderly, safety, surgery

#### Streszczenie

Rosnący odsetek ludności starszej to zjawisko o zasięgu światowym, które powoduje zmiany w epidemiologii pacjentów poddawanych zabiegom chirurgicznym, co skutkuje wzrostem liczby chorych pacjentów o osłabionej sprawności, którzy są bardziej podatni na potencjalne powikłania. Ocena przedoperacyjna musi być kompleksowa, aby skorygować odwracalne zaburzenia i zapobiec zdarzeniom niepożądanym. Opracowanie strategii i interwencji mających na celu zmniejszenie ryzyka i poprawę wyników pozwala pracownikom służby zdrowia na wprowadzenie praktyk opartych na dowodach w celu optymalizacji bezpieczeństwa pacjenta. Celem manuskryptu jest analiza bezpieczeństwa chorych pacjentów w podeszłym wieku w trakcie procesu perioperacyjnego oraz opisanie strategii zmniejszających ryzyko i poprawiających wyniki. Przegląd literatury został przeprowadzony w różnych bazach danych (PubMed, Scopus, SciELO, itp.). Kryteria wyboru obejmowały terminy takie jak „opieka perioperacyjna”, „osoby starsze w podeszłym wieku”, „chirurgia” i „powikłania pooperacyjne”. Wykorzystano operatory logiczne AND oraz OR. Według wszystkich przeanalizowanych badań pacjenci geriatryczni poddani operacji wymagają szczególnej opieki oraz kompleksowej oceny przedoperacyjnej ze względu na swoją podatność na ryzyko. Współpraca międzyzakładowa oraz opracowanie protokołów opartych na dowodach są kluczowe dla maksymalizacji bezpieczeństwa. Odpowiednie zarządzanie znieczuleniem, regulacja temperatury, optymalizacja bilansu płynów oraz dokładne monitorowanie parametrów życiowych, między innymi, są niezbędne dla zapewnienia bezpieczeństwa pacjentów. Pacjent starszy poddany operacji

ma unikalne cechy, które wymagają specjalnych rozważań, aby zapewnić kompleksową opiekę dostosowaną do ich potrzeb, zmniejszając dodatkowe czynniki ryzyka. Ważne jest uwzględnienie ich kruchości oraz zdolności do regeneracji. (PNN 2024;13(2):85–89)

**Słowa kluczowe:** powikłania, osoby starsze, bezpieczeństwo, chirurgia

## Introduction

The increasing percentage of elderly population is a global phenomenon that is causing changes in the epidemiology of surgical patients. Due to this aging population, the number of elderly patients undergoing surgical procedures is steadily increasing. Preoperative assessment in this patient group must be thorough and comprehensive, with the aim of stratifying the patient, correcting reversible abnormalities, and preventing complications, ultimately striving for safe and timely surgery [1]. Geriatric patients are more susceptible to adverse events and postoperative complications due to physiological changes, comorbidities, and polypharmacy, making a comprehensive assessment necessary. Additionally, the implementation of evidence-based practices is vital to optimize safety and perceived quality [2].

Ambulatory major surgery (AMS) has been a significant surgical advancement, allowing for more aggressive procedures even in extreme ages. The economic, social, and patient safety advantages of AMS have been supported by previous studies [3]. Grifasi et al., through a systematic review of various articles, identified a set of factors contributing to patient safety in geriatric surgery, including preoperative assessment, intraoperative management, and postoperative care [4].

Furthermore, strategies and interventions aimed at mitigating risks and improving outcomes in this specific patient population are highlighted. By understanding the complexities associated with geriatric surgical care, healthcare professionals can implement evidence-based practices to optimize patient safety and enhance the quality of care provided.

The objectives outlined in this study aim to achieve an analysis of patient safety among geriatric patients in surgical care during the perioperative process.

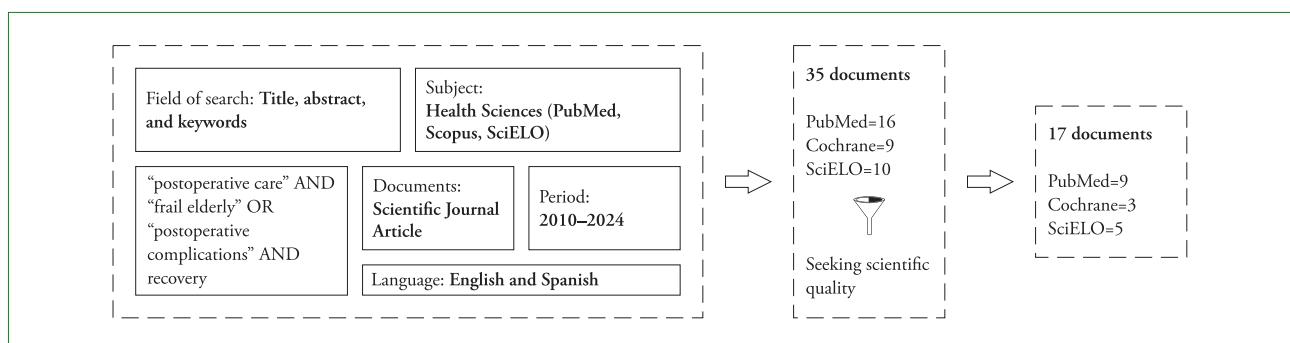
Additionally, they aim to describe key factors contributing to this safety and strategies aimed at reducing risks and improving outcomes.

## Material and Methods

A literature review was conducted across different databases (PubMed, Scopus, SciELO, etc.) to gather scientific evidence from previous studies regarding the management of geriatric patients in the perioperative process. Selection criteria included terms such as “perioperative care”, “frail elderly”, surgery, “postoperative complications”, nutrition, rehabilitation, and recovery. Boolean operators AND and OR were used. A comprehensive search, evaluation, and analysis of articles published between 2010 and 2024 in English and Spanish were carried out (Figure 1).

## Results

A total of 24 studies were reviewed, including observational studies and systematic reviews, of which 17 provided scientific evidence (Table 1). Herrera-Landero and d’Hyver de las Deses [5] highlighted the importance of comprehensive preoperative assessment, including comorbidities, frailty, functional capacity, and cognitive function. Given the vulnerability associated with advanced age, the British Geriatrics Society has implemented a working guide to establish guidelines for improving perioperative outcomes in individuals with frailty undergoing elective or emergency surgery [6]. Additionally, this guide emphasizes the importance of working with patient representatives, as well as all parties involved in the care process. Other authors, such as Wu et al. [7], also emphasized the importance of



**Figure 1.** Synthesis of the systematic literature review process

multidisciplinary team involvement and establishing high-quality nursing care to enhance patient safety in geriatric surgical care. The Spanish Association of Surgeons [8] recommends interdisciplinary teamwork, use of standardized protocols, implementation of evidence-based guidelines, effective communication among healthcare providers, patient and family education, and continuous quality improvement initiatives. By adopting a multidisciplinary approach and incorporating these strategies into clinical practice, healthcare professionals can optimize patient safety and achieve better outcomes for geriatric surgical patients. Comprehensive preoperative assessment of a frail geriatric patient should include functional status, cognitive assessment, nutritional assessment, and medication reconciliation, which can help identify vulnerabilities and adapt perioperative management accordingly.

During the surgical procedure, several factors must be considered to ensure patient safety. These include proper anesthesia management, temperature regulation, optimization of fluid balance, and meticulous monitoring of vital signs. Geriatric patients are more prone to delirium, postoperative cognitive dysfunction, and perioperative complications; therefore, individualized care plans should be implemented to minimize these risks. Vargas Castillo et al. [9] also emphasized the need

for good intraoperative management through temperature regulation and fluid optimization. Bengoa et al. [10] demonstrated that a multimodal approach to pain control, early mobilization, prevention of deep vein thrombosis, and close postoperative follow-up improve outcomes.

Early mobilization, pain management, management of changes in volume status, prevention of delirium, prevention of postoperative complications (such as infections and pressure ulcers), and medication optimization are key components of postoperative care. Close monitoring and timely intervention can help identify and address any potential complications, thereby improving patient outcomes.

Postoperative care is crucial for the successful recovery of geriatric surgical patients. A study conducted in Italy observed that octogenarian patients undergoing inguinal hernia surgery were discharged 2 hours after completing the intervention following adequate clinical monitoring. They were provided with postoperative instructions, analgesics, and a 24-hour telephone contact [11].

Assessing pain in elderly patients is sometimes difficult due to alterations in pain thresholds, compounded by advanced dementia, necessitating the use of special tools such as PACSLAC or DOLOPLUS2. Performing peripheral nerve blocks is a useful strategy to reduce the

**Table 1.** Results of the systematic review of articles

Author	Study	Main results
Pre operative		
Wu M. et al.	Systematic review	Participation of a multidisciplinary team and establishment of high-quality nursing care [7]
The Spanish Association of Surgeons	Clinical practice guide	The use of standardized protocols, implementation of evidence-based guidelines, effective communication among healthcare providers, patient and family education, and continuous quality improvement initiatives [8]
Vargas Castillo P.M. et al.	Systematic review	Good intraoperative management through temperature regulation and fluid optimization [9]
Bengoa F. et al.	Systematic review	A multimodal approach to pain control, early mobilization, prevention of deep vein thrombosis, and close postoperative follow-up improve outcomes [10]
Post operative		
Abou-Setta A.M. et al.	Systematic review	Performing peripheral nerve blocks is a useful strategy to reduce the incidence of delirium and opioid use [12]
Carson J.L. et al.	Clinical trial	Fluid replacement must be very careful to optimize fluid and electrolyte balance. Transfuse when there are symptoms of anemia or hemoglobin levels are below 8 mg/dl [13]
Javedan H. et al.	Clinical trial	Delirium prevention: cognitive stimulation through reorientation, improving sensory impairments with the use of glasses or hearing aids, early mobilization, education of involved staff, as well as the primary caregiver [14]
Oliva Mompean E. et al.	Systematic review	When deficiencies in intake or malnutrition are detected, the use of protein supplements is especially useful. Adequate nutrition is related to better surgical wound healing [15]
Maldonado Maldonado D.A. et al.	Systematic review	The patient should be mobilized and assisted ambulation should be initiated as soon as possible, ideally within 24 hours [16]

Source: Own research

incidence of delirium and opioid use [12]. Developing a multimodal pain management strategy is extremely important. Volume replacement must also be very careful to optimize fluid and electrolyte balance. Currently, scientific evidence recommends transfusion when there are symptoms of anemia or hemoglobin levels are below 8 mg/dl [13].

In addition to everything mentioned above, assessing cognitive status and the presence of delirium is necessary in elderly patients. It facilitates intrahospital management as well as subsequent rehabilitation. Delirium prevention is part of the nursing care plan and includes some nursing interventions such as cognitive stimulation through reorientation, improving sensory impairments with the use of glasses or hearing aids, early mobilization, education of staff involved, as well as the primary caregiver [14].

Other functional patterns need to be addressed to ensure the safest possible perioperative process for geriatric patients. Oliva Mompean et al. [15] ensure that adequate nutrition is related to better surgical wound healing. The Spanish Society of Endocrinology and Nutrition [17] establishes important nutritional strategies such as assessing muscle mass, starting early feeding, or using pharmacological nutrition. When deficiencies in intake or malnutrition are detected, the use of protein supplements is especially useful. Maldonado Maldonado et al. also assert that early rehabilitation could help regain functionality that was present before surgery. Patients should be mobilized and start assisted walking as soon as possible, ideally within 24 hours [16].

## Conclusions

Ensuring patient safety in geriatric surgical care is a complex task that requires a comprehensive understanding of the unique challenges faced by this population. By focusing on preoperative assessment, intraoperative management, postoperative care, and the implementation of strategies aimed at improving patient safety, healthcare professionals can enhance the quality of care provided to geriatric surgical patients. Continuous research and collaboration among healthcare providers are essential to achieve further advancements in this field and optimize patient outcomes in geriatric surgical care.

The systematic review offers valuable insights for nursing practice, especially when caring for frail patients undergoing surgery. Some recommendations derived from the findings are:

- Use validated tools and assessments to accurately determine frailty status, as it can significantly influence perioperative care and outcomes.

- Communication and coordination among team members are crucial for optimizing perioperative care and minimizing complications.
- Individualized Care Plans.
- Empowering patients and families with knowledge can help alleviate anxiety, improve adherence to care plans, and enhance overall satisfaction with the surgical experience.
- Monitor outcomes, identify areas for improvement, and implement evidence-based interventions to enhance the safety and quality of care provided to this vulnerable population.

By incorporating these recommendations into nursing practice, healthcare professionals can contribute to improving the perioperative care and outcomes of frail patients undergoing surgery.

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A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation of data, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article

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