THE CONTRIBUTION OF PATIENT FACTORS TO ELECTIVE SURGERY DELAY: A LITERATURE REVIEW

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ABSTRACT

Background: Delay of elective surgery is a significant problem in relation to the quality of health services. The causes of delay are quite diverse ranging from patient factors, human resources, and Organization. However, this study aims to determine the reasons for delaying surgery from patient factors. **Method**: The method used in this study is a literature review. The keywords used in searching for journals as review material are "Patient factor" AND "Delay" AND "Elective" AND "Surgery". Researchers use the Scopus, ScienceDirect, and ProQuest databases. The journals reviewed are limited to the last 5 years from 2021 to 2025 using Englishs. The protocol uses PRISMA. **Results**: This study found 667 journals which were then eliminated due to duplication, not in accordance with the study and containing interventions resulting in 10 journals. The findings in the journal review are divided into 3 domains, namely medical diagnosis or the most common case types are neurological and orthopedic cases, demographic factors including comorbidities, high ASA scores, race, kidney failure, steroid use, gender and health insurance, previous emergency visits, and arrival time. **Conclusion**: These results help patients and hospitals take anticipatory steps to prevent delays.
Keywords: patient factors, delays, surgery, elective, surgery

Introduction

Elective surgery plays a vital role in improving patients' quality of life, alleviating symptoms, and preventing the deterioration of medical conditions. However, various factors lead to delays in the performance of these surgeries, which can negatively impact patient health, hospital efficiency, and patients' economic and mental well-being (Renfree et al., 2019). Therefore, understanding patient factors that contribute to these delays is a crucial step in improving healthcare delivery. Delays in elective surgery can worsen existing medical conditions (Thiel et al., 2020). Patients with orthopedic or neurosurgical conditions, delays can lead to increased pain, decreased mobility, or even more serious complications. Conditions that are not treated promptly can progress to medical emergencies, ultimately increasing the burden on the overall healthcare system (Ilce et al., 2017). By analyzing patient factors, such as general health conditions, comorbidities, or level of readiness for surgery, providers can identify the risk of delay early and take

preventive measures (Brown et al., 2017). Hospital operational efficiency is also greatly affected by delays in elective surgeries. Uncertainty in surgical scheduling can result in significant waste of resources. Operating rooms, medical staff, and equipment that were scheduled for postponed surgeries must be reallocated, which can disrupt workflow and operational efficiency (Brown et al., 2017) . Research into patient factors can provide valuable insights into how to schedule more effectively and reduce the frequency of delays. For example, factors such as the instability of a patient's medical condition or the need for additional preoperative testing can be identified in advance, allowing for more realistic and flexible scheduling. Additionally, delays in elective surgeries have significant economic implications (Becerra et al., 2019). For patients, delays mean increased medical costs and additional medical visits, which can be a financial burden, especially for those with limited financial resources.

From a healthcare system perspective, delays lead to increased operational costs due to the need to reschedule surgeries and lengthen hospital stays (Rana et al., 2022). By understanding the patient factors that lead to delays, hospitals can develop strategies to mitigate these economic impacts, such as through pre-operative health promotion programs or chronic disease management support. The psychological impact of surgical delays should also not be overlooked. The uncertainty and anxiety that patients experience due to surgical delays can significantly impact their mental health (Rahnama et al., 2017). Worry about an untreated health condition, coupled with uncertainty about when surgery will occur, can lead to prolonged stress (Sezgin et al., 2024). Researching patient factors can help providers develop better communication approaches and psychological support, helping patients cope with anxiety and improving their overall experience of healthcare.

To address these challenges, in-depth and comprehensive research on patient factors that lead to elective surgery delays is needed. This research will not only provide insight into modifiable risk factors but will also aid in the development of more effective, evidence-based interventions. For example, by identifying patients at high risk for delays, hospitals can implement more intensive preoperative preparedness programs or provide additional medical support before surgery. In the context of health policy, data from this study can be used to inform better policymaking. Policymakers can use these findings to design initiatives aimed at minimizing delays, such as improving access to primary care, optimizing referral systems, or developing more effective chronic disease management programs. Additionally, policies that focus on improving patient readiness and reducing delays may contribute to better overall health outcomes. The purpose of this study was to determine patient factors that contribute to elective surgery delays.

Method

The method used in this study is a literature review. The keywords used in searching for journals as review material are "Patient factor" AND "Delay" AND "Elective"

AND "Surgery". Researchers use the Scopus, ScienceDirect, and ProQuest databases. The journals reviewed are limited to the last 5 years using English. The protocol uses PRISMA. Article screening is carried out by providing criteria for articles to be reviewed, namely adult respondents, elective surgery and publications in the last 5 years. Review process In the process of developing a literature review, the eligibility of the study is determined in two stages. First, to check the exclusion criteria, the title, keywords, and abstract are screened twice by the lead author.

Second, conduct a full text review. critical appraisal process of research studies conducted by the Joanna Briggs Institute (JBI).

Tabel 1: *Prism Literature Review*

Results

The results of the study found 10 journals that met the requirements for review. A total of 3 journals used a retrospective design, 4 studies used prospective, 2 studies used cross-sectional and 1 study used a multicenter observational approach. The largest number of samples was 161,232 and the least was 49 respondents. The study was conducted in various countries.

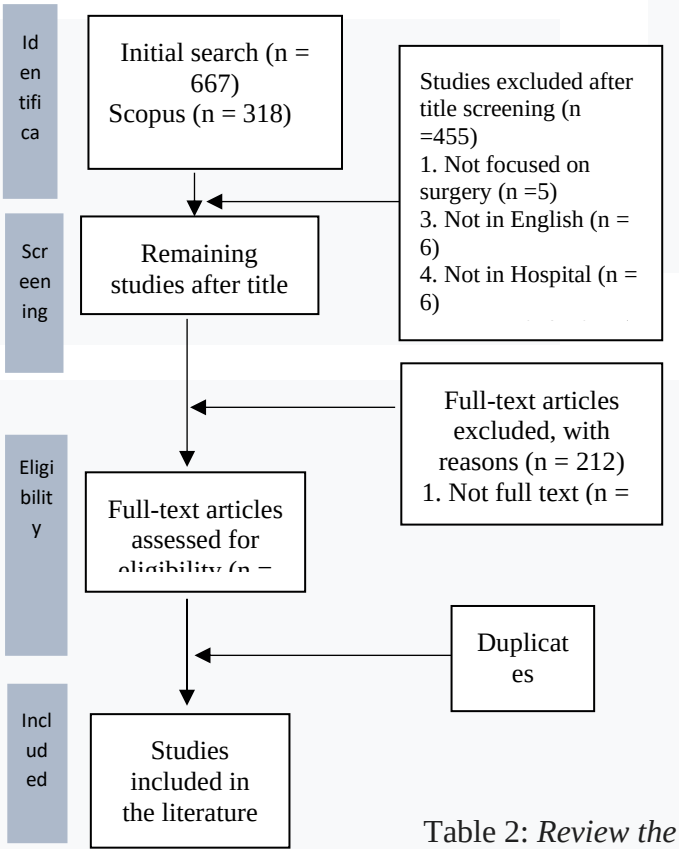

Table 2: *Review the Journal*

ID	Author and Title	Research Purposes	Research Methods	Research result		
				Medical Diagnosis or Type of disease	Demographics	Logistics Problems
A1	Factors Associated with Waiting Time for Patients Scheduled for Elective Surgical Procedures at the University Teaching Hospital (UTH) in Zambia (Musonda, 2020).	The aim was to examine waiting times for elective surgery at University Teaching Hospitals (UTH) in Zambia, looking at patient and facility factors.	Design: retrospective Sample: 182 respondents Variable: factors of surgery delay Instrument: Data collection with medical records Analysis: regression	Nervous disease	-	-
A2	Assessing the Delays in Patients Undergoing Orthopedic Surgery and the Associated Factors at Taleghani Hospital (Zandi et al., 2020).	This study aims to identify and classify the various delays in our center and the factors that may be associated with them	Design: cross sectional Sample: 46 respondents Variable: surgery delay factor Instrument: observation sheet Analysis: independent samples t-test or Mann-Whitney U test	Types of orthopedic surgery	-	-
A3	Association between government policy and delays in	his study aims to quantify surgical backlogs during the COVID-19	Design: retrospective	Types of diseases related to infection and respiration	-	-

	emergent and elective surgical care during the COVID-19 pandemic in Brazil: a modeling study(Truche et al., 2021).	pandemic in the Brazilian public health system and determine the relationship between state-level policy responses and the level of delays in public surgical care at the state level.	Sample: 161,232 respondents Variable: surgical delay factors Instrument: Data collection with medical records Analysis: descriptive and regression			
A4	Delay of Surgery Start Time: Experience in a Nigerian Teaching Hospital (Okeke et al., 2020).	The study was conducted with the aim of determining factors related to the postponement of scheduled operations.	Design: prospective Sample: 1178 respondents Variable: surgery delay factor Instrument: observation sheet Analysis: regression	Types of diseases such as neurosurgery and orthopedics	-	-
A5	Contributing Factors to Operating Room Delays Identified from an Electronic Health Record: A Retrospective Study (Pappada et al., 2022).	The purpose of this pilot study was to identify factors not typically documented in the electronic health record (EHR) that may contribute to or be indicators of surgical delay.	Design: retrospective Sample: 67821 respondents Variable: surgery delay factor Instrument: medical record observation sheet Analysis: Analysis of	Type of disease: most common is neurosurgery	High BMI or obesity	-

			Variance (ANOVA)			
A6	The Third Delay in General Surgical Care in a Regional Referral Hospital in Soroti, Uganda (Starr et al., 2022).	This study assessed delays in surgical services in hospital during care at Soroti Regional Referral Hospital (SRRH), a tertiary health facility in Soroti, Uganda.	Design: prospective Sample: 1160 respondents Variable: surgery delay factor Instrument: medical record observation sheet Analysis: t-test and Mann–Whitney U test	1. Type of disease: Neurosurgical and cardiac diseases are often delayed 2. Type of surgery: major surgery is more often delayed	Gender: Women experience more delays	
A7	Emergency cholecystectomy: risk factors and impact of delay on electively booked patients, a 5-year experience of a tertiary care center (AlSaleh et al., 2024)	To examine the overall frequency of delays in admission of patients with surgical emergencies to the operating room across 3 organizational pathways in a French hospital.	Design: prospective multicenter Sample: 1149 respondents Variable: surgical delay factors Instrument: medical record observation sheet Analysis: multivariable logistic regression model	-	-	Previous emergency visit
A8	Deferral of elective surgeries during the COVID -19 pandemic	This study explores the financial, physical, and	Design: cross sectional Sample: 398 respondents	1. Type of disease: neurosurgery and heart surgery are	-	-

	and its impact on Palestinian patients: a cross-sectional study (Atary & Abu-Rmeileh, 2023)	psychological implications of postponing elective surgeries for Palestinians at three hospitals in the West Bank during the pandemic.	Variable: surgery delay factor Instrument: medical record observation sheet Analysis: regression	often delayed during the COVID-19 pandemic 2. Type of surgery: major surgery is more often delayed		
A9	Patient-specific Predictors of Surgical Delay in a Large Tertiary-care Hospital Operating Room (Meyers et al., 2024)	The aim of this study was to describe patient-specific factors that predict surgical delay in elective surgical cases.	Design: retrospective Sample: 109 respondents Variable: surgery delay factor Instrument: medical record observation sheet Analysis: linear regression	1.Use of anesthesia 2. Presence of kidney failure	1.Race 2.Consideration sof obesity 3. American Society of Anesthesiologist Class 3(ASA) or higher 4. Previous use of steroid medications	1. Health Insurance
A10	Root causes of first-case start time delays for elective surgical procedures: a prospective multicenter observational cohort study in Ethiopia (Firde et al., 2024)	This study aims to determine the factors that influence the delay of elective surgery patients.	Design: multicenter observational study Sample: 530 respondents Variable: surgical delay factors Instrument: medical record observation sheet	Abnormal case	-	Arrival time

			Analysis: binary logistic regression			

Discussion

Delays in surgical procedures are complex and multifaceted, involving a variety of interrelated factors. A review of several studies suggests that the issue can be broken down into several main categories: patient factors, operational/logistical factors, and external factors such as government policies and emergency situations such as pandemics. In this analysis, we will discuss the results of several studies conducted around the world, focusing on how each of these factors contributes to surgical delays.

Medical Diagnosis Factors or Disease Type and Surgery

A study conducted by (Musonda, 2020). in Zambia found that neurosurgery types had longer wait times. The urgency of the condition significantly affected surgical scheduling; expedited cases were prioritized, while degenerative spine conditions were less urgent. A retrospective study showed that the average wait time for semi-urgent surgery did not significantly impact postoperative hospitalization, suggesting that other factors may play a more critical role. Approximately 65% of respondents reported delays, indicating that the type of surgical procedure may be a key factor in determining patient wait times. This study highlights the importance of considering the type of surgery in delay analysis. Furthermore, (Zandi et al., 2020) focused on administrative processes in orthopedic surgery. They found that factors such as patient registration, room preparation, and operating staff contributed 40%, 35%, and 25% to delays, respectively. Although this study did not directly address individual patient characteristics, it does demonstrate how patient-related processes can impact wait times.

Demographic Factors

These factors encompass a range of aspects directly related to the individual patient's condition that may impact waiting times for surgery. Studies such as that conducted by (Meyers et al., 2024)

(A9) identified a number of patient-specific predictors that may contribute to delays. These factors include the use of anesthesia, presence of renal failure, race, obesity, and an American Society of Anesthesiologist (ASA) class 3 or higher. Previous use of medications such as steroids was also identified as a potential contributor. This study highlights how individual medical conditions and preoperative preparation can impact a patient's readiness for surgery, which in turn impacts the timing of surgery. Other studies, such as that by (Pappada et al., 2022). (A5), have shown that factors not explicitly documented in the electronic health record (EHR) may also play a role. For example, obesity and high Body Mass Index (BMI) are often factors that prolong the time to surgery, due to higher

complications and more complex preparations. These studies also show that surgical delays can vary widely by geographic location and socioeconomic context. For example, studies in Zambia (A1) and Nigeria (A4) show that patient and facility factors are particularly influential in the context of developing countries, where resources may be more limited and health systems less integrated than in developed countries. In contrast, studies in France (A7) and Brazil (A3) show that even though facilities may be more sophisticated, factors such as government policies and emergency situations can interfere with surgical care. This suggests that surgical delays are a global problem, but solutions must be tailored to the local context and specific needs of local health systems.

Operational and Logistics Factors

Operational and logistics factors are elements related to hospital management and internal processes that can affect the efficiency of surgical schedules. A study by (Firde et al., 2024). (A10) in Ethiopia, for example, identified patient arrival time as a major factor affecting delays. Hospital logistics, such as operating room readiness, staff availability, and medical equipment, are also major concerns. This study also highlights the importance of effective coordination and resource management to minimize delays. Other studies, such as that conducted by (Zandi et al., 2020). at Taleghani Hospital, examined delays in the context of orthopedic surgery and found that factors such as late patient arrivals or availability of medical equipment can cause significant delays. These factors can be exacerbated by problems with time management and coordination between departments within the hospital. External factors include elements beyond the direct control of the hospital or patient, such as government policies and emergency situations.(Truche et al., 2021). in their study in Brazil highlighted the impact of the COVID-19 pandemic on surgical delays. The study found that public health policies and government responses to the pandemic played a significant role in delays, especially in the context of an already burdened public health system. Additionally, (Atary & Abu-Rmeileh, 2023) examined the impact of elective surgical delays in Palestinian patients during the pandemic, revealing the financial, physical, and psychological implications for patients. The study showed that delays not only affected patients' physical health but also their psychological well-being and economic situation, especially in the context of a global health crisis.

Overall, these studies paint a complex picture of the factors contributing to surgical delays. While common themes emerge, such as the importance of efficient logistics management and the influence of patient health conditions, each study provides unique insights based on its specific context. Addressing this issue requires a comprehensive, multi-layered approach that involves improving hospital management, adjusting health policies, and paying special attention to individual patient needs. Solutions to surgical delays cannot be universal, but must take into account both local and global factors that affect health systems. By understanding the multiple factors involved and how they

interact, policymakers and hospital managers can develop more effective strategies to reduce delays and improve health outcomes for patients around the world.

Conclusion

This review shows that the main causal factors of patients related to elective surgery delays are divided into 3 domains, namely medical diagnosis or the most common case types are neurological and orthopedic cases, demographic factors including comorbidities, high ASA scores, race, kidney failure, steroid use, gender and health insurance, previous emergency visits, and arrival time. This allows patients and hospitals to take anticipatory action to prevent surgical delays.

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