



## ANALYSIS OF SURGICAL CANCELLATIONS: CAUSES, IMPACTS, AND STRATEGIES FOR IMPROVEMENT

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### ABSTRACT

This study aimed to identify and analyze the primary causes of surgical cancellations and propose strategies for their prevention. Among 8,256 scheduled operations, 166 cases (4%) were cancelled. The leading causes included high-risk underlying diseases (22.5%), patient non-attendance (14.3%), and changes in clinical status (10.5%). Additional reasons were operation theater (OT) time constraints (11.2%), patient dissatisfaction (8.9%), and incomplete Nil PerOs (NPO) preparation (9.7%). The study emphasized the importance of thorough preoperative assessments, effective patient education, and streamlined hospital operations. Moreover, enhancing coordination between departments, regular equipment maintenance, and accurate documentation can significantly reduce cancellations. These preventive measures will not only improve hospital efficiency but also contribute to better patient outcomes and cost-effectiveness in healthcare operations.

**Key words:** - Surgical Cancellations, Operating Room Efficiency, Preoperative Assessment, Patient Non-attendance, Hospital Operations.

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### INTRODUCTION

Healthcare expenditures have risen significantly, with approximately 50% of government spending currently allocated to hospital services, primarily due to escalating operational costs [1]. Enhancing operating room (OR) performance and improving service quality are critical strategies for boosting hospital financial capacity. Operational efficiency is a major factor influencing hospital expenses, and large hospitals invest substantial resources to manage operating rooms effectively and retain surgeons and OR staff. However, last-minute surgery cancellations are a frequent cause of hospital inefficiency and resource wastage.

Research conducted in Hong Kong, Spain, Pakistan, India, and Australia found that 4% to 16.6% of

scheduled surgeries were cancelled. Common reasons included delays from previous operations, patient no-shows, lack of preparation, shortage of ICU beds, and changes in patients' clinical conditions. Similarly, hospitals in Iran (Urmia and Tehran) reported cancellation rates ranging from 10.9% to 18.6% [2]. The primary causes were high-risk underlying health conditions, changes in surgical plans, patient-related issues, and scheduling conflicts, particularly when appointments were made outside regular working hours (e.g., during afternoons instead of mornings). The consequences of surgery postponements extend beyond the hospital setting, leading to numerous complications [3]. Firstly, these delays increase costs for patients, healthcare providers, and insurance companies. Secondly, they contribute to inefficient use of hospital beds, thereby limiting access for patients in urgent need of care [4].

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Additionally, patients may experience emotional distress, mental health issues, and heightened anxiety due to prolonged surgical delays. Prolonged fasting periods, often required before surgery, can also adversely affect vulnerable groups, such as infants and elderly patients, potentially leading to serious health complications. Addressing these inefficiencies is crucial for reducing healthcare costs, improving patient outcomes, and enhancing the overall effectiveness of hospital operations.

## MATERIALS AND METHODS

A study was conducted at tertiary care hospital, where 166 cases (4%) were cancelled out of a total of 8,256 scheduled operations. Patient records were reviewed to gather data on all cancelled procedures. An extensive review of relevant global studies was conducted, and a preliminary categorization was performed before designing the checklists. To create the initial checklist, 25 patient profiles were analyzed [6]. At the start of the study, 15 potential reasons for surgical cancellations were listed. After a thorough review and final consolidation, six key reasons remained (see Table

1). To ensure the validity of the questionnaire, feedback was obtained from five subject matter experts each with published research in the field. Additionally, input was provided by three professors specializing in hospital administration, four members of the hospital's clinical governance committee, and two representatives from the Vice-Rector of Health at state universities. The reliability of the checklist was assessed by two independent researchers, who simultaneously recorded 30 surgical cases using the tool. Data collection and statistical analysis were conducted using SPSS software version 11.5, focusing on frequency distribution and percentages. A significance level (p-value) of 0.05 was applied for all statistical tests [7].

## RESULTS

Our analysis of patient records revealed that the reason for surgery cancellation was not documented in 30.8% of cases. The ages of patients with cancelled operations ranged from one month to 102 years, with an average age of 50.6 years. Among these patients, 67 were women (44%) and 96 were men (60%).

**Table 1: Reason and percentage of cancellations of operations**

| Reasons for Operation Cancellation | Percentage |
|------------------------------------|------------|
| High-risk underlying disease       | 22.5%      |
| Patient's non-attendance           | 14.3%      |
| Change in clinical status          | 10.5%      |
| Lack of Operation Theater time     | 11.2%      |
| Patient's dissatisfaction          | 8.9%       |
| Patients' incomplete NPO time      | 9.7%       |

**Table 2: Distribution of age and sex**

| Age Group | Male Frequency | Male Percent | Female Frequency | Female Percent | Total |
|-----------|----------------|--------------|------------------|----------------|-------|
| Under 20  | 30             | 60.00%       | 20               | 42.55%         | 50    |
| 21-50     | 58             | 55.24%       | 50               | 48.08%         | 108   |
| 51-80     | 65             | 57.52%       | 52               | 46.85%         | 117   |
| Above 80  | 40             | 64.52%       | 27               | 39.13%         | 67    |
| Total     | 193            |              | 149              |                | 342   |

## DISCUSSION

High-risk underlying diseases were responsible for 24.7% of all cancelled operations. Among these cases, 68.9% were attributed to anesthesia-related issues arising from high-risk conditions [8]. Multiple factors contribute to surgical cancellations aside from underlying diseases. Errors such as scheduling procedures without evaluating patients' medical histories or proceeding with surgery despite prohibitive clinical conditions are significant contributors [9]. To address this issue and reduce cancellation rates, it is advised that all patients undergo a thorough preoperative assessment to identify high-risk conditions. The second most common cause of cancellations was patient non-attendance, accounting for 10.6% of cases. Similar to high-risk diseases, 68% of patients who missed surgery were linked to anesthesia-

related issues due to pre-existing health conditions [12]. Non-attendance can stem from patients' lack of awareness about potential surgical complications, which highlights the importance of nurses educating patients on the consequences of cancellation. Changes in clinical status were the third leading cause of cancellations, contributing to 7.9% of cases. Research conducted in Spain, Australia, and other countries identified clinical deterioration as a major cause of surgical cancellations [1,4,10]. The fourth most frequent cause was insufficient operation theater (OT) time, accounting for 7% of cancellations. Similar findings were reported in studies from Yazd, Tehran, China, Spain, Australia, and India [1,4,7,10-12]. Inadequate OT time may result from factors such as the surgeon's experience, speed, and surgical complexity, which can extend the duration of

previous procedures and disrupt scheduling. Additionally, teaching hospitals, where trainee surgeons participate in procedures, often experience longer operation times due to the educational process [12]. Predicting the duration of surgery is challenging because of the unpredictable nature of surgical procedures, which may lead to delays and cancellations. However, calculating average operation times based on past records can help hospitals manage schedules more effectively and reduce the impact of overruns on subsequent surgeries [13]. Patient dissatisfaction accounted for 5.8% of cancellations. This factor is often overlooked or merged with non-attendance in other studies, which may explain its limited documentation. Nurses can reduce dissatisfaction-related cancellations by thoroughly informing patients about the procedure, its importance, and their right to consent or refuse surgery [14]. Additionally, incomplete preparation, such as failure to adhere to Nil PerOs (NPO) fasting protocols, contributed to 5.5% of cancellations. This cause has received little attention in previous studies, possibly because it was specific to the hospital's speciality in the present research. Physicians can help reduce such cancellations by emphasizing preoperative instructions and ensuring that patients are properly prepared for surgery [15]. Lastly,

technical issues and equipment failures were responsible for 4.6% of cancellations. Preventing such issues requires improved coordination between hospital departments, paraclinical units, and surgical teams. Additionally, hospitals should implement checklists to ensure that all necessary equipment and patient documentation are ready before surgery, thus minimizing preventable operational disruptions.

## CONCLUSIONS

The results of this study indicate that many surgical cancellations are preventable. Reducing cancellations requires ensuring the availability of essential equipment, conducting regular maintenance and proper calibration of medical devices, and minimizing technical malfunctions. Additionally, fostering better coordination between para-clinical units and operating rooms, promoting effective communication among physicians, nurses, and patients, and ensuring that operating room staff accurately record the reasons for cancellations can significantly lower cancellation rates. Implementing these measures will help improve the efficiency and performance of hospital operating rooms, ultimately enhancing operational effectiveness and patient care.

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