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RESEARCH ARTICLE
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# AN ANALYSIS OF LAST-MINUTE SURGICAL OPERATION CANCELLATIONS: PATTERNS, CAUSES, AND IMPACT

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**Abstract**
This study analysed 200 cases of operation cancellations at tertiary care hospital from January 2021 to December 2022 to identify contributing factors and propose solutions for reducing cancellations. Patient records were reviewed, and reasons for cancellations were categorised through a validated checklist. Statistical analysis was conducted using SPSS version 11.5. The results revealed that high-risk underlying diseases were the most common cause (24.5%), followed by patient non-attendance (13%), changes in clinical status (9%), lack of operation theatre time (9%), patient dissatisfaction (7%), and incomplete NPO time (7.5%). The gender distribution showed a higher frequency of cancellations among males (58.5%) than females (41.5%), with the highest number of cancellations observed in the 21–80 age groups. The study highlights the importance of preoperative assessments, patient education, efficient theatre management, and equipment maintenance to minimise cancellations. Implementing these measures can improve operational efficiency, optimise resource utilisation, and enhance patient outcomes.

**Keywords:** Operation Cancellations, Preoperative Assessment, Patient Non-attendance, Hospital Efficiency, Theatre Management

## Introduction

Healthcare expenditures have surged significantly, with approximately 50% of government spending currently allocated to hospitals [1], primarily due to rising service costs. Enhancing hospital financial capacity requires optimising operating room performance while maintaining high-quality care. Operational efficiency plays a crucial role in controlling hospital expenses. To effectively manage operating rooms and attract both surgeons and surgical staff, large hospitals invest significant resources.

However, last-minute surgery cancellations are a frequent cause of inefficiency and resource wastage. Studies conducted in various countries, including Hong Kong, Spain, Pakistan, India, and Australia, revealed that between 4% and 16.6% of operations were cancelled. Common reasons for cancellations included prolonged earlier surgeries, unavailability of operating rooms, patient no-shows, inadequate preoperative preparation, limited intensive care unit (ICU) capacity, and sudden changes in patients' clinical conditions.

Globally in hospitals, its reported that cancellation rates ranging from 10.9% to 18.6% [2]. The primary causes for cancellations were high-risk underlying health conditions, alterations in surgical

plans, and patient-related issues. Additionally, many surgeries were scheduled outside regular working hours (mornings), contributing to delays.

Postponing operations leads to numerous complications. Firstly, it increases financial burdens for patients, healthcare systems, and insurers. Secondly, inefficient use of hospital beds prevents access for patients who urgently need care [3]. Furthermore, cancelled surgeries can cause emotional and psychological distress for patients. Extended fasting periods, particularly for infants and elderly patients, pose additional health risks.

Operational disruptions due to cancellations lead to disorganized surgical schedules, wasted time, higher operational costs, and an increased risk of hospital-acquired infections [4-5]. Addressing these issues is crucial for improving efficiency and patient outcomes.

## Materials and methods

A total of 200 cases were cancelled out of the scheduled operations at tertiary care hospital from January 2021 to December 2022. Patients' records were reviewed to gather information on all cancelled procedures. We explored relevant international studies and performed an initial categorization before designing the checklists. Subsequently, 25 patient profiles were examined to create the preliminary checklist.

At the start of the study, 15 possible reasons for cancellation were included in the checklist. Following a comprehensive review and consolidation, the list was refined to six key reasons (Table 1). To ensure the validity of the questionnaire, feedback was obtained from five experts with relevant experience and at least one published article on the subject. Additionally, the panel included three professors specializing in hospital administration, four members of the hospital's clinical governance committee, and two representatives from the vice-rector of health office at state universities.

Reliability was assessed by two researchers who independently entered data from 30 operations into the checklist simultaneously. Statistical analysis was conducted using SPSS software version 11.5 to calculate frequencies and percentages. A significance level of 0.05 was applied for all statistical tests.

## Results

A total of 200 operation cancellations were analysed, revealing various contributing factors. The most common reason for cancellation was high-risk underlying diseases, accounting for 49 cases (24.5%). Patient non-attendance was the second most frequent cause, with 26 cases (13%). Changes in clinical status and lack of operation theatre time each contributed to 18 cases (9%). Additionally, patients' dissatisfaction led to 14 cancellations (7%), while incomplete NPO (nil per os) time was responsible for 15 cases (7.5%). These findings highlight that patient-related factors (such as non-attendance, dissatisfaction, and incomplete NPO) contributed to a significant portion of cancellations, while hospital-related issues (such as theatre time constraints) also played a critical role. Addressing these factors could improve operational efficiency and reduce the cancellation rate.

**Table 1: Reasons for Operation Cancellations Among 200 Cases**

| Reasons for Operation Cancellation | Number of Cases | Percentage |
|---|---|---|
| High-risk underlying disease | 49 | 24.5% |
| Patient's non-attendance | 26 | 13% |
| Change in clinical status | 18 | 9% |
| Lack of Operation Theater time | 18 | 9% |
| Patient’s dissatisfaction | 14 | 7% |
| Patients' incomplete NPO time | 15 | 7.5% |
| **Total** | **200** | **100%** |

The analysis of 200 operation cancellations based on age and gender distribution revealed notable patterns. Among patients under 20 years of age, 32 cancellations were observed, with 20 males (62.5%) and 12 females (37.5%). The highest number of cancellations occurred in the 21–50 age group, with a total of 62 cases, comprising 35 males (56.45%) and 27 females (43.55%). In the 51–

80 age group, 69 cancellations were recorded, including 40 males (57.97%) and 29 females (42.03%). For patients aged above 80 years, there were 34 cancellations, with 22 males (64.71%) and 12 females (35.29%). Overall, males accounted for 117 cases (58.5%), while females represented 80 cases (41.5%). The findings indicate a higher frequency of cancellations among male patients across all age groups, with the 21–50 and 51–80 age groups being the most affected. This trend highlights the importance of addressing factors contributing to cancellations, particularly in middle-aged and elderly populations.

**Table 2: Distribution of Operation Cancellations by Age and Gender**

| Age Group | Male (Frequency) | Male (Percent) | Female (Frequency) | Female (Percent) | Total |
|---|---|---|---|---|---|
| Under 20 | 20 | 62.5% | 12 | 37.5% | 32 |
| 21-50 | 35 | 56.45% | 27 | 43.55% | 62 |
| 51-80 | 40 | 57.97% | 29 | 42.03% | 69 |
| Above 80 | 22 | 64.71% | 12 | 35.29% | 34 |
| **Total** | **117** | **58.5%** | **80** | **41.5%** | **200** |

## Discussion

The analysis of 200 operation cancellations revealed several key factors contributing to these interruptions. High-risk underlying diseases emerged as the most common cause, accounting for 24.5% (49 cases) of all cancellations (6-7). Among these patients, 68.5% experienced anesthesia-related complications due to their underlying conditions (8). Errors, such as scheduling operations without adequately considering patients' medical histories or proceeding despite contraindications, contributed to these cancellations. Thorough preoperative evaluations are essential to identify high-risk conditions and reduce cancellations. Patient non-attendance was the second most frequent cause, contributing to 13% (26 cases). This issue highlights the importance of patient education regarding the consequences of missed surgeries. Nurses play a crucial role in ensuring that patients understand the risks and complications associated with surgery postponements (9-11). Changes in patients' clinical status, such as sudden deterioration in health, accounted for 9% (18 cases) of cancellations, making it the third most common reason. Similar findings have been reported in studies from Spain, Australia, and India, where changes in health conditions were identified as a significant cause of cancellations. Lack of operating theatre time was another significant factor, contributing to 9% (18 cases). This issue often results from delays caused by prolonged surgeries, which are particularly common in teaching hospitals due to the involvement of trainees and longer surgical procedures (12). Unpredictable surgical complexities can further disrupt scheduling. Calculating average operation durations and optimising theatre scheduling can help reduce these delays. Patient dissatisfaction, which accounted for 7% (14 cases), was another factor contributing to cancellations. This cause is often overlooked in other studies, possibly because it is grouped with non-attendance or other patient-related factors. Nurses can play a vital role in reducing such cancellations by clearly explaining the procedure, addressing patient concerns, and ensuring patients fully understand their rights and choices (13).

Incomplete NPO (Nil Per Os) time, resulting in 7.5% (15 cases) of cancellations, was another notable issue. Patients who do not adhere to fasting guidelines are at risk of complications during surgery, leading to cancellations. This reason is less frequently reported in other studies, which may be due to differences in study settings or hospital specialties (14-15). Effective communication by physicians and reminders from nursing staff can help minimise these occurrences. Additionally, technical faults and equipment failures were responsible for 4.5% (9 cases) of cancellations. Ensuring proper coordination between hospital departments, conducting regular equipment maintenance, and verifying that all necessary surgical instruments and documents are ready beforehand can help prevent these avoidable cancellations. Addressing these primary causes through enhanced preoperative evaluations, patient education, improved scheduling, and proactive hospital management can significantly reduce

the frequency of operation cancellations. Implementing such measures will not only optimise resource utilisation but also improve patient satisfaction and overall hospital efficiency.

## Conclusion

The study of 200 operation cancellations identified several critical factors contributing to surgical disruptions, with high-risk underlying diseases, patient non-attendance, changes in clinical status, lack of operating theatre time, patient dissatisfaction, and incomplete NPO time being the most prevalent causes. High-risk underlying conditions emerged as the leading cause, highlighting the necessity for comprehensive preoperative assessments. Additionally, patient-related issues such as non-attendance, dissatisfaction, and incomplete fasting underscore the importance of effective communication and patient education. Hospital-related factors, including limited operating theatre time and equipment failures, further contributed to inefficiencies, emphasizing the need for improved scheduling strategies and regular equipment maintenance. The findings also revealed a higher frequency of cancellations among male patients, particularly in the 21–80 age groups, suggesting a need for targeted interventions for middle-aged and elderly patients. Addressing these challenges requires a multifaceted approach, including thorough preoperative evaluations, efficient theatre management, patient engagement initiatives, and proactive maintenance protocols. Implementing these measures will not only reduce cancellation rates but also enhance patient outcomes, optimise resource utilisation, and improve overall hospital efficiency. This study contributes valuable insights to hospital administrators and healthcare policymakers, aiding in the development of strategies to minimise surgical cancellations and improve healthcare service delivery.

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