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Research Article

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Day-of-Surgery Cancellations: A Prospective Study at Abo-Slim Trauma Hospital, Tripoli, Libya

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ABSTRACT

Same-day cancellations of elective surgeries compromise patient care and hospital efficiency. this study aimed to determine the frequency and causes of such postponements in a tertiary trauma hospital.

A prospective observational study was conducted at *Aboslim Trauma Hospital* over a 6-month period (October 1, 2024 to March 31, 2025). All elective surgeries scheduled across five departments (General Surgery, Orthopedic Surgery, Neurosurgery, Plastic Surgery, and Chest Surgery) were included. Postponements on the day of surgery were recorded by the chief scrub nurse, and causes were categorized into: patient medical reasons, lack of operating time, administrative issues, patient no-shows, and changes in surgical plan. A *chi-square* goodness-of-fit test was used to determine whether the distribution of causes differed significantly from a uniform distribution.

Out of a total of 1,128 scheduled elective surgeries, 282 cases, representing 25% of the total, were postponed on the day of operation. The most frequently cited reason for postponement was patient medical issues, accounting for 120 cases or 42.6%. Lack of available operating time was responsible for 98 postponements, making up 34.8% of the total. Administrative issues, such as scheduling errors or equipment unavailability, contributed to 43 cases (15.2%). Additionally, 12 patients (4.3%) failed to attend on the day of surgery, and in 9 cases (3.1%), the surgical plan was altered, resulting in postponement. To determine whether these reasons occurred with equal frequency or whether certain causes were disproportionately represented, a chi-square goodness-of-fit test was conducted. The test yielded a chi-square statistic of 99.12 with four degrees of freedom and a *P*-value of 1.51×10^{-20}. This result indicates a highly significant deviation from a uniform distribution, confirming that some causes were significantly more prevalent than others.

Most same-day surgery postponements were due to medical issues or scheduling inefficiencies, and were largely preventable. Interventions aimed at improving preoperative assessments and realistic OR scheduling could substantially reduce cancellations.

Keywords- *Elective surgery; Postponement; Cancellations; Hospital Management.*

INTRODUCTION

Same-day cancellations of elective operations are a significant challenge in healthcare systems worldwide, leading to inefficient use of hospital resources, increased costs, and considerable distress for patients and their families.[1, 2] Globally, day-of-surgery cancellation rates range from 5% to 40%, depending on institutional capacity, resource availability, and quality of preoperative processes.[3,4]

At *Aboslim Trauma University Teaching Hospital*, a 400-bed tertiary center, the unpredictability of elective surgery postponement was a growing concern. In some cases, patients had already been prepped for surgery, leading to wasted resources, prolonged hospital stays, and increased anxiety. This study aimed to identify and quantify the major reasons for these cancellations to help improve the efficiency of surgical services and patient care outcomes.

While some cancellations are clinically justified, such as those resulting from sudden changes in patient condition, many are avoidable with appropriate planning and coordination. Previous studies have identified a variety of contributing factors, including inadequate preoperative assessment, inefficient operating theatre scheduling, equipment shortages, and administrative miscommunication.[5-7] These issues not only compromise theatre utilization but also lead to loss of operating time, staff dissatisfaction, and increased burden on already strained healthcare systems.[8,9]

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In addition to operational inefficiencies, same-day cancellations can have a profound psychological and socioeconomic impact on patients.[10,11] Many patients make significant personal and logistical arrangements prior to elective procedures, including taking time off work, arranging transport, fasting, and mentally preparing for surgery. A last-minute postponement can lead to frustration, anxiety, and loss of trust in the healthcare system.[12] For those with limited financial or social support, the consequences may be even more severe. Understanding the root causes of these disruptions is therefore essential not only from a hospital management perspective but also to uphold the principles of patient-centered care and clinical excellence.[13]

Moreover, the lack of local data on the frequency and causes of day-of-surgery postponements has limited the ability of hospitals in similar settings to implement targeted interventions.[14,15] By prospectively studying cancellations across five surgical departments, this research aims to provide evidence-based insights specific to the institutional context of Aboslim Trauma Hospital. The findings are expected to guide operational reforms, inform staff training, and support hospital-wide policies aimed at reducing avoidable cancellations and optimizing theatre performance

MATERRTIALS AND METHODS

A prospective observational study was conducted over six months, from October 1, 2024, to March 31, 2025. The study included all elective surgeries scheduled in five operating rooms across the following departments: General Surgery, Orthopedic Surgery, Neurosurgery, Plastic Surgery, and Chest Surgery.

Patients were assessed clinically at admission, and high-risk individuals were evaluated by anesthesiologists one day prior to surgery. Surgery lists were finalized by consultants or registrars and submitted by 12:00 PM the day before surgery. Any surgery listed and subsequently not performed on the scheduled day was classified as a same-day postponement.

The chief scrub nurse systematically recorded all cases that were postponed on the day of surgery and documented the underlying reasons. These reasons were subsequently categorized into five main groups: patient medical reasons, lack of operating time, administrative issues, patient no-shows, and changes in the surgical plan. This classification provided a structured framework for analyzing the frequency and impact of each cause within the study period.

To determine whether these causes were uniformly distributed or dominated by specific factors, we performed a chi-square goodness-of-fit test.[16]

RESULTS

During the six-month study period from October 1, 2024 to March 31, 2025, a total of 1,128 elective surgical procedures were scheduled across five departments: General Surgery, Orthopedic Surgery, Neurosurgery, Plastic Surgery, and Chest Surgery. Among these, 282 cases (25%) of the total cases were postponed on the day of surgery. This substantial proportion reflects a critical inefficiency in the hospital's surgical workflow and prompted further analysis into the underlying causes.

The most frequently reported reason for postponement was patient medical conditions, accounting for 120 cases (42.6%). These included acute onset of hypertension, recent/current upper respiratory tract infections, electrolyte imbalances, uncontrolled diabetes, and newly identified cardiac abnormalities. In many instances, these conditions were identified during final preoperative assessments, suggesting a gap in early optimization and medical clearance.

The second most common cause was lack of available operating room "OR" time, reported in 98 cases (34.8%). Several factors contributed to this, including underestimation of surgical durations, surgeon competency, prolonged procedures due to intraoperative complications, and delayed turnover times between cases. This category also included instances where more cases were added to the surgical list than could be realistically completed within the day's schedule, particularly in departments attempting to reduce waiting lists or accommodate unplanned additions.

Administrative issues were responsible for 43 postponed cases (15.2%). These included equipment unavailability (e.g., non-sterile or malfunctioning instruments), inadequate staff coverage, and communication lapses between the surgical team, anesthesiology, and nursing services. In some cases, patients were not adequately prepared due to incomplete preoperative workups or missing consent forms, leading to day-of-surgery deferrals.

Twelve patients (4.3%) failed to attend "patient no-shows" surgery despite being listed. In some cases, patients misunderstood or forgot the surgery date; others canceled at the last minute due to fear, financial hardship, or unresolved personal commitments. Although this represents a smaller portion of the postponements, it underscores the importance of preoperative counseling and reliable communication systems.

The least common reason was change in the surgical plan, noted in 9 cases (3.1%). These included patients for whom the indication for surgery was reconsidered after additional imaging or specialist input, or when a more conservative approach was deemed appropriate at the last minute.

To evaluate whether these causes of postponement occurred with similar frequency or reflected significant variability, a chi-square goodness-of-fit test was performed.[16,17] The null hypothesis assumed an equal distribution of postponement causes across all five categories. The test yielded a chi-square statistic of 99.12 with 4 degrees of freedom and a

P-value of 1.51×10^{-20}, demonstrating a highly significant deviation from a uniform distribution. This confirms that certain causes, particularly patient medical reasons and lack of OR time, were disproportionately responsible for postponements and should be prioritized for targeted intervention.

DISCUSSION

Our study revealed that 25% of elective surgeries were postponed on the day of operation, with medical reasons (42.6%) followed by lack of operating room (OR) time (34.8%) being the major contributors. These findings align closely with reports from general surgical departments, where patient medical issues and OR time constraints consistently emerge as top reasons for cancellations.[18-20]

Medical Reasons

The most common reasons were acute medical issues including hypertension, respiratory infections, electrolyte disturbances, and unanticipated cardiovascular abnormalities similar to patterns observed in Iran and Canada.[21,22] A study from the academic center in Iran found that 37% of cancellations were due to unsuitability for surgery, with episodic deterioration between pre-assessment and surgery.[20,22] These data underscore the importance of timely anesthetic review and improved preoperative optimization protocols.[23,24]

OR Time Limitations

Time constraints in the OR accounted for 34.8% of postponements, in line with findings from India and Canada where 59.7% and ~29–32% of cases, respectively, were postponed due to theatre overruns.[19] Underestimation of case duration, particularly with trainees, and inadequate scheduling practices are recurring challenges. Reviews suggest that predictive scheduling, using historical data or artificial intelligence tools, can reduce such inefficiencies.[25-27]

Administrative and Resource Issues

Administrative problems, including equipment failure, staff shortages, and poor interdepartmental communication,[28] comprised 15.2% of postponements. These issues are consistent with studies that flagged resource/facility constraints and administrative failures as significant contributors to elective surgery cancellations.[29]

Patient No-shows and Surgical Plan Changes

Patient non-attendance (4.3%) and last-minute surgical plan changes (3.1%) made up a smaller proportion. The 4.3% rate is modest compared with reported no-show rates of 10–60% across different settings.[30-32] Plan changes usually followed fresh imaging or specialist consultation and were comparatively rare, but underscore the need for preoperative communication channels to anticipate such changes.[33-35]

A voidability and Potential Interventions

Consistent with the global literature, such as BMC Health Services Research and academic hospital audits, our study confirms that most postponements are avoidable. For example, BMC found that 71.6% of day-of-surgery cancellations were avoidable.[29]

Promising strategies

One of the most effective measures is the enhancement of preoperative assessment, particularly through mandatory anesthesiologist reviews conducted 24 hours prior to surgery. This practice has been associated with improved perioperative outcomes, especially in patients with cardiovascular comorbidities, as it allows timely optimization of modifiable risks. Another critical intervention is the implementation of predictive scheduling systems. Emerging tools such as artificial intelligence-based dynamic allocation and metaheuristic models like random-key scheduling have shown potential in minimizing operating room inefficiencies by providing more accurate case duration estimates and optimal case sequencing.[36,37] These tools are especially useful in high-volume institutions where time overruns frequently disrupt theatre schedules. Additionally, some healthcare systems, including the UK's National Health Service, have tried the use of standby patient systems.[38] This approach involves identifying and preparing suitable patients who can be called in to occupy last-minute cancellations, thereby reducing wasted operating room slots and maintaining throughput.[5,34]

Structured team briefings and equipment checks conducted prior to each surgical session have also demonstrated measurable impact. A Norwegian study reported a reduction in cancellation rates from 8.5% to 4.9% following the implementation of standardized preoperative coordination protocols, emphasizing the importance of clear communication and logistical readiness.[39]

Finally, strengthening patient communication strategies plays a vital role in preventing no-shows and last-minute cancellations. Interventions such as phone call reminders, short message service (SMS),[40]informative leaflets explaining the surgical process, and dedicated hotlines to answer patient queries have been shown to enhance compliance and reduce misunderstandings that might otherwise lead to avoidable delays.[41]

CONCLUSION

This prospective study highlights that same-day postponement of elective surgeries remains a significant challenge within hospital systems, with one in four scheduled procedures deferred on the day of operation. The most prevalent causes were patient medical issues and operating room time constraints, both of which are largely avoidable with improved preoperative assessment, more accurate surgical scheduling, and strengthened administrative coordination.

Our findings mirror global patterns and reinforce the need for systemic reforms. Enhanced communication between

surgical, anesthetic, and administrative teams, along with evidence-based planning and the use of predictive scheduling tools, can markedly improve operating room efficiency. Moreover, establishing protocols such as mandatory anesthetist review for high-risk patients, reliable patient reminder systems, and equipment readiness checks could substantially reduce unnecessary delays.

Ultimately, reducing day-of-surgery postponements not only improves the efficient use of hospital resources but also enhances patient satisfaction, clinical outcomes, and institutional trust. Future work should focus on implementing and auditing targeted interventions, with the goal of bringing postponement rates in line with international best practice benchmarks, ideally below 5%.

RECOMMENDATIONS

To reduce the frequency of same-day surgery postponements in our institution, several key recommendations can be implemented. First, all high-risk patients should undergo a mandatory anesthesiologist review at least 24 hours prior to surgery to ensure medical readiness and address any modifiable risk factors in advance. Second, surgical teams should adopt evidence-based time estimates when preparing the operative list, as this can significantly enhance the accuracy of scheduling and help avoid time overruns. Third, conducting pre-surgical team briefings can ensure that all necessary equipment, staffing, and resources are confirmed and available before the procedure begins. In addition, implementing a robust patient reminder system can improve patient compliance and minimize the number of no-shows. Finally, regular audits and systematic reviews of cancelled cases should be carried out as part of a broader quality assurance program, enabling the identification of recurrent issues and supporting continuous improvement in operating room efficiency.

STRENGTHS AND LIMITATIONS

This study's strengths include its prospective design across multiple surgical specialties and robust categorization of reasons. However, limitations include its single-center design and lack of cost-analysis or qualitative patient feedback. Additionally, since the study period predated peak respiratory illness seasons, some cancellations related to infection may be underestimated.

RECOMMENDATIONS

We recommend implementing a multifaceted improvement bundle that includes enhanced pre-assessment protocols, evidence-based scheduling tools, patient standby initiatives, and staff engagement in audit- driven feedback loops. Monitoring key performance indicators (e.g., cancellation rate, OR utilization, patient satisfaction) before and after interventions will help assess impact and support sustainable improvements.

REFERENCES

1. Kaddoum R, Fadlallah R, Hitti E, El-Jardali F, El Eid G. (2016) Causes of cancellations on the day of surgery at a Tertiary Teaching Hospital, *BMC Health Serv Res*. **16**, 259.

2. Koh WX, Phelan R, Hopman WM, Engen D. (2021) Cancellation of elective surgery: rates, reasons and effect on patient satisfaction, *Can J Surg*. **64** (2), E155-E61.

3. Yu K, Xie X, Luo L, Gong R. (2017) Contributing factors of elective surgical case cancellation: a retrospective cross-sectional study at a single-site hospital, *BMC Surg*. **17** (1), 100.

4. Sukwana A, Mrara B, Oladimeji O. (2023) Prevalence and Causes of Elective Surgical Cancellations: Findings from a Rural Tertiary Hospital in the Eastern Cape, South Africa, *Healthcare (Basel)*. **11** (2).

5. Pappada SM, Papadimos TJ, Khuder S, Mack ST, Beachy PZ, Casabianca AB. (2022) Contributing Factors to Operating Room Delays Identified from an Electronic Health Record: A Retrospective Study, *Anesthesiol Res Pract*. 8635454.

6. Ramokopelwa M, Moeta M. (2024) Reaching consensus on factors impacting optimal use of an orthopaedic emergency theatre in a public hospital, *Health SA*. **29**, 2348.

7. Sarang B, Bhandoria G, Patil P, Gadgil A, Bains L, Khajanchi M, *et al*. (2022) Assessing the Rates and Reasons of Elective Surgical Cancellations on the Day of Surgery: A Multicentre Study from Urban Indian Hospitals, *World J Surg*. **46** (2), 382-90.

8. Ang WW, Sabharwal S, Johannsson H, Bhattacharya R, Gupte CM. (2016) The cost of trauma operating theatre inefficiency. *Ann Med Surg (Lond)*. **7**, 24-9.

9. Mohammed GDF, Mansoor Z, Mohaddis M, Chandran P. (2022) A Perspective on Theatre Efficiency in Terms of Theatre Utilisation and Theatre Costs and the Effects of Infection Control Protocols on These during the COVID-19 Pandemic. *Cureus* **14** (11), e31023.

10. Viftrup A, Nikolajsen L, Laustsen S, Dreyer P. (2025) The emotional toll of day-of-surgery cancellations on patients - a qualitative study using participant observation and interviews, *Int J Qual Stud Health Well-being* **20** (1), 2502193.

11. Ellis DA, McQueenie R, McConnachie A, Wilson P, Williamson AE. (2017) Demographic and practice factors predicting repeated non-attendance in primary care: a national retrospective cohort analysis, *Lancet Public Health* **2** (12), e551-e9.

12. Hardavella G, Aamli-Gaagnat A, Frille A, Saad N, Niculescu A, (2017) Powell P. Top tips to deal with challenging situations: doctor-patient interactions, *Breathe (Sheff)*. **13** (2), 129-35.

13. Edgman-Levitan S, Schoenbaum SC. (2021) Patient-centered care: achieving higher quality by designing care through the patient's eyes, *Isr J Health Policy Res*. **10** (1), 21.

14. Sommer JL, Jacobsohn E, El-Gabalawy R.(2021) Impacts of elective surgical cancellations and postponements in Canada, *Can J Anaesth*. **68** (3), 315-323.

15. Vahwere BM, Sikakulya FK, Ssebuufu R, Jorge S, Okedi XF, Abdullah S, *et al*. (2021) Prevalence and factors associated with cancellation and deferment of elective surgical cases at a rural private tertiary hospital in Western Uganda: a cross-sectional study, *Pan Afr Med J*. **39**, 139.

16. Abdul Rahman H, Noraidi AA, Hj Khalid AN, Mohamad-Adam AZ, Zahari NH, Tuming NE. (2025) Practical guide to calculate sample size for chi-square test in biomedical research, *BMC Med Res Methodol*. **25** (1), 144.

17. Bergh D. (2015) Chi-Squared Test of Fit and Sample Size-A Comparison between a Random Sample Approach and a Chi-Square Value Adjustment Method, *J Appl Meas*. **16** (2), 204-217.

18. Chang JH, Chen KW, Chen KB, Poon KS, Liu SK. (2014) Case review analysis of operating room decisions to cancel surgery, *BMC Surg*. **14**, 47.

19. Garg R, Bhalotra AR, Bhadoria P, Gupta N, Anand R. (2009) Reasons for cancellation of cases on the day of surgery-a prospective study. *Indian J Anaesth*. **53**(1), 35-39.

20. Sarang B, Bhandoria G, Patil P, Gadgil A, Bains L, Khajanchi M, *et al*. (2022) Assessing the Rates and Reasons of Elective Surgical Cancellations on the Day of Surgery: A Multicentre Study from Urban Indian Hospitals, *World Journal of Surgery* **4**6(2), 382-90.

21. Naderi-Boldaji V, Banifatemi M, Zandi R, Eghbal MH, Nematollahi M, Sahmeddini MA. (2023) Incidence and root causes of surgery cancellations at an academic medical center in Iran: a retrospective cohort study on 29,978 elective surgical cases, *Patient Safety in Surgery* **17**(1), 24.

22. Naderi-Boldaji V, Banifatemi M, Zandi R, Eghbal MH, Nematollahi M, Sahmeddini MA. (2023) Incidence and root causes of surgery cancellations at an academic medical center in Iran: a retrospective cohort study on 29,978 elective surgical cases, *Patient Saf Surg*. **17**(1), 24.

23. Alanzi A, Ghazzal S, Abduljawad S, Ghuloom A, Fouad A, Adeel S. (2023) Importance of Pre-anesthetic Evaluation in Diagnosing Coexisting Asymptomatic Medical Conditions: A Report of Two Cases, *Cureus* **15** (9), e46250.

24. Fu G, Xu L, Chen H, Lin J. (2025) State-of-the-art anesthesia practices: a comprehensive review on optimizing patient safety and recovery, *BMC Surg*. **25**(1), 32.

25. Solak AK, Pandza H, Beciragic E, Husic A, Tursunovic I, Djozic H. (2019) Elective Case Cancellation on the Day of Surgery at a General Hospital in Sarajevo: Causes and Possible Solutions, *Mater Sociomed* **31** (1), 49-52.

26. Pattnaik S, Dixit SK, Bishnoi V. (2022) The Burden of Surgical Cancellations: A Quality Improvement Study on the Importance of Preoperative Assessment, *Cureus* **14** (1), e21731.

27. Abate SM, Chekole YA, Minaye SY, Basu B. (2020) Global prevalence and reasons for case cancellation on the intended day of surgery: A systematic review and meta-analysis, *Int J Surg Open* **26**, 55-63.

28. Attri JP, Sandhu GK, Mohan B, Bala N, Sandhu KS, Bansal L. (2015) Conflicts in operating room: Focus on causes and resolution. *Saudi J Anaesth*. **9** (4), 457-463.

29. Kaddoum R, Fadlallah R, Hitti E, El-Jardali F, El Eid G. (2016) Causes of cancellations on the day of surgery at a Tertiary Teaching Hospital, *BMC Health Services Research* **16** (1), 259.

30. Appavu ST, Al-Shekaili SM, Al-Sharif AM, Elawdy MM. (2016) The Burden of Surgical Cancellations and No-Shows: Quality management study from a large regional hospital in Oman, *Sultan Qaboos Univ Med J*. 16(3), e298-302.

31. Elawdy MM. (2017) No-show as a cause of surgical cancellation: A mini review from a Middle Eastern perspective, *Saudi J Anaesth*. **11** (2), 262-263.

32. Marbouh D, Khaleel I, Al Shanqiti K, Al Tamimi M, Simsekler MCE, Ellahham S, *et al*. (2020) Evaluating the Impact of Patient No-Shows on Service Quality, *Risk Manag Healthc Policy* **13**, 509-517.

33. Valero-Bover D, González P, Carot-Sans G, Cano I, Saura P, Otermin P, *et al*. (2022) Reducing non-attendance in outpatient appointments: predictive model development, validation, and clinical assessment, *BMC Health Serv Res*. **22**(1), 451.

34. Leibner G, Brammli-Greenberg S, Mendlovic J, Israeli A. (2023) To charge or not to charge: reducing patient no-show. *Israel Journal of Health Policy Research* **12** (1), 27.

35. Toker K, Ataş K, Mayadağlı A, Görmezoğlu Z, Tuncay I, Kazancıoğlu R. (2024) A Solution to Reduce the Impact of Patients' No-Show Behavior on Hospital Operating Costs: Artificial Intelligence-Based Appointment System, *Healthcare (Basel)*. **12**(21).

36. AlSerkal YM, Ibrahim NM, Alsereidi AS, Ibrahim M, Kurakula S, Naqvi SA, *et al*. (2025) Real-Time Analytics and AI for Managing No-Show Appointments in Primary Health Care in the United Arab Emirates: Before-and-After Study, *JMIR Form Res*. e64936.

37. Maleki Varnosfaderani S, Forouzanfar M. (2024) The Role of AI in Hospitals and Clinics: Transforming Healthcare in the 21st Century, *Bioengineering (Basel)*. **11**(4).

38. Dimitriadis PA, Iyer S, Evgeniou E. (2013) The challenge of cancellations on the day of surgery, *Int J Surg*. **11** (10), 1126-1130.

39. Dyb K. (2019) Patient Reported Reasons for Surgery Cancellations Do Not Necessarily Correspond with Hospitals' Representation of the Same Problem, *Stud Health Technol Inform*. **262**, 75-78.

40. Akhu-Zaheya LM, Shiyab WY. (2017) The effect of short message system (SMS) reminder on adherence to a healthy diet, medication, and cessation of smoking among adult patients with cardiovascular diseases, *Int J Med Inform*. **98**, 65-75.

41. Zia F, Cosic L, Wong A, Levin A, Lu P, Mitchell C, *et al*. (2021) Effects of a short message service (SMS) by cellular phone to improve compliance with fasting guidelines in patients undergoing elective surgery: a retrospective observational study, *BMC Health Serv Res*. **21** (1), 27.

42. Braschi C, Gutierrez G, Liu JK, Yetasook AK, Simms ER, Petrie BA, *et al*. (2023) Impact of Automated Reminder Calls in a Safety-Net Setting on Surgical Clinic No-Show Rates, *Am Surg*. **89** (11), 4955-4957.