



## CLINICAL AUDIT ON PRE-OPERATIVE FASTING OF ELECTIVE SURGICAL PATIENTS AT AYUB TEACHING HOSPITAL ABBOTTABAD.

Ali Mujtaba<sup>1</sup>, Muhammad Raza<sup>2</sup>, Hamid Nasim<sup>3</sup>, Faizan Taj<sup>4</sup>, Adil Muhammad<sup>5</sup>,  
Muhammad Attique Ur Rehman<sup>6</sup>.

<sup>1\*</sup>Final year MBBS student at Ayub Medical College Abbottabad.  
(Email. alimujtaba1191hamidi@gmail.com)

<sup>2</sup>Final year MBBS student at Ayub Medical College Abbottabad.  
(Email. mrzarbbani001@gmail.com)

<sup>3</sup>Final year MBBS student at Ayub Medical College Abbottabad.  
(Email. Hamidnaseem777@gmail.com)

<sup>4</sup>Final year MBBS student at Ayub Medical College Abbottabad. (Email. Ftaj444@gmail.com)

<sup>5</sup>Final year MBBS student at Ayub Medical College Abbottabad. (Email. adilamc024@gmail.com)

<sup>6</sup>Final year MBBS student at Ayub Medical College Abbottabad.  
(Email. 92.atik.ur.rahman@gmail.com)

**\*Corresponding Author:** Ali Mujtaba

\*Final year MBBS student at Ayub Medical College Abbottabad.  
(Email. alimujtaba1191hamidi@gmail.com)

### Abstract

A preoperative fast is required before anesthesia. Preoperative fasting is primarily done to lower stomach volume and acidity, which lowers the risk of pulmonary aspiration. At Ayub Teaching Hospital, patients occasionally fasted for extended periods of time, despite the numerous negative effects of prolonged fasting. To assess the preoperative fasting duration by patients who were scheduled for elective surgery in Ayub Teaching Hospital Abbottabad, from May 27 to June 27, 2024, a cross-sectional study was carried out, and all 70 patients who were under general anesthesia were included in the interviews that were done 24 hours after surgery. The majority of patients, 77.1%, fasted for more than 10 hours before their procedures for solid food. A significant majority of the patients, 72.9%, fasted for more than 10 hours for liquid. These figures show that most of the patients fasted more than the recommended time for both solid and liquid. A small fraction, 6.7%, felt hungry after fasting for solid food. More than half of the patients, 69.5% felt thirst after prolong fasting for liquid. In conclusion, this audit has illuminated significant noncompliance with established preoperative fasting practices, with a predominant number of patients fasting for durations well beyond recommendations. By addressing these systemic shortcomings through policy updates, comprehensive staff training, and operational enhancements, healthcare institutions can markedly improve patient outcomes and ensure alignment with international standards of care.

### Introduction

The global practice of preoperative fasting, or NPO (nil by mouth), is a routine procedure during surgeries requiring general anesthesia. Pre-operative fasting is done in surgical procedures that require

general anesthesia to avoid the risk of pulmonary aspiration.<sup>1,2</sup> This complication arises due to the loss of protective function of laryngeal reflexes and can result in a spectrum of issues ranging from aspiration pneumonitis to sudden asphyxial death.<sup>3</sup> To avoid such situations, the practices have resulted in long and rigid pre-operative fasting routines, which are still used for elective surgeries today. Recent evidence indicates that traditional perioperative care practices of extended fasting and delayed feeding are outdated and detrimental to patient prognosis. The prolonged fasting before surgeries can also adversely affect recovery times, prolonged hospital stay, and increased burden. However, the landscape of medical knowledge is dynamic, prompting periodic reassessment of established practices to align with emerging evidence-based guidelines. The new evidence-based guidelines that have been published in recent years in countries like the United States, Canada, and Europe recommend a decreased duration of preoperative fasting with clear liquids and beverages rich in carbohydrates until a few hours before elective surgery or other procedures that require anesthesia to improve quality in service, safety, and health of the patient. They recommend that health professionals abandon the outdated policies of long periods of fasting with new evidence to guide pre-anesthetic practice.<sup>4</sup> Protocols on preoperative fasting suggest shorter fasting, especially for liquids, providing more comfort to patients and lower risk of hypoglycemia and dehydration without increasing the incidence of perioperative pulmonary aspiration.<sup>5</sup>

Against this backdrop, this audit embarks on a journey to evaluate the efficacy and compliance of existing preoperative fasting protocols. By meticulously examining patient records, surveying healthcare providers, and analyzing institutional policies, we aim to review the strengths and shortcomings of current practices. Moreover, this audit seeks to identify opportunities for refinement, focusing on optimizing patient comfort, safety, and surgical outcomes. By fostering a culture of continuous improvement and knowledge sharing, we aspire to elevate the standard of care in preoperative fasting, ultimately enhancing the overall quality and safety of surgical interventions. Through the insights gleaned from this audit, we aim to pave the way for informed revisions to preoperative fasting protocols, ensuring they remain aligned with the latest advancements in medical science and best practices.

Guidelines used as reference for this clinical audit (AAGBI, ASA, RCOA, and RCN)

### **Ingested material Minimum fast (h)**

Clear fluids 2

Light meal 6

Pre-operative fasting represents an essential domain of surgical preparation as it helps reduce the risks of aspiration and helps ensure safe anesthesia delivery in the operating room. This systematic literature review covers the current practices and recommendations on preoperative fasting and its guidelines, focusing specifically on studies from Pakistan and those found globally. A recent audit conducted at a public sector hospital in Karachi highlighted the prevalent practices of pre-operative assessments among surgeons, showing a tendency to order unnecessary laboratory investigations. This may suggest a potential gap in adherence to established protocols that may stretch to fasting practices<sup>10</sup>. In another Islamabad study, preoperative fasting compliance was assessed, and it was found that most patients were unaware of the underlying reasons for fasting. This resulted in prolonged fasting times that were usually longer than the recommended guidelines.<sup>6</sup> Internationally, several research studies have assessed preoperative fasting. A prospective clinical audit conducted in India suggested that despite recommendations supporting shorter fasting periods, the traditional "nil by mouth from midnight" approach was still followed by most patients. Indeed, patient education regarding fasting orders is essential, as only 1% of this population understood the reasons for preoperative fasting.<sup>7</sup> Studies conducted in Ethiopia on pediatric surgical patients showed that the average period of NPO was 10-12 hours, far more than the recommended fasting period for surgical cases. The studies highlighted the importance of proper adherence to the established norms to minimize complications related to prolonged fasting.<sup>9</sup> A systematic review and meta-analysis examining social support's impact on pre-operative anxiety found weak associations between social

support and reduced anxiety levels among elective surgery patients. This suggests that enhancing social support networks could indirectly influence adherence to pre-operative guidelines, including fasting.<sup>8</sup>

This literature reveals the alarming trend of non-compliance with pre-operative fasting guidelines in Pakistan and worldwide. There is a gap in educating the healthcare provider and the patient regarding the importance of following these rules. Such standardized practices and improved communication may lead to a reduction in risks posed by incorrect fasting.

### Materials and Methods

**Study Design and Period-**A quantitative cross-sectional study design was used and the study was conducted from May 27 June to 27, 2024

**Study Setting-** Ayub Teaching Hospital Abbottabad, KPK Pakistan

**Study Population-** All adult elective patients who operated under anesthesia during the data collection period were included.

**Sample Size-** patients who operated under anesthesia and met the inclusion criteria during the data collection period were included.

### Data Collection Procedure

A checklist covering the following topics was created: the patient's identity; the type of operation (minor vs. major); the time the operation began; the length of the fasting period from food and liquids; the preoperative maintenance fluid status; the advice received; hunger and thirst; and the patient's awareness of the current fasting guidelines. Prior to gathering data, the checklist underwent pilot testing in additional hospitals and revisions were made. Patients were visited the night before and the morning of the day of surgery. They were interviewed about the time of NPO after 24 h after surgery. Before interviewing written consent was taken from the patients.

Permission for this clinical audit was obtained from the institutional ethical review board, Ayub Medical College, Abbottabad.

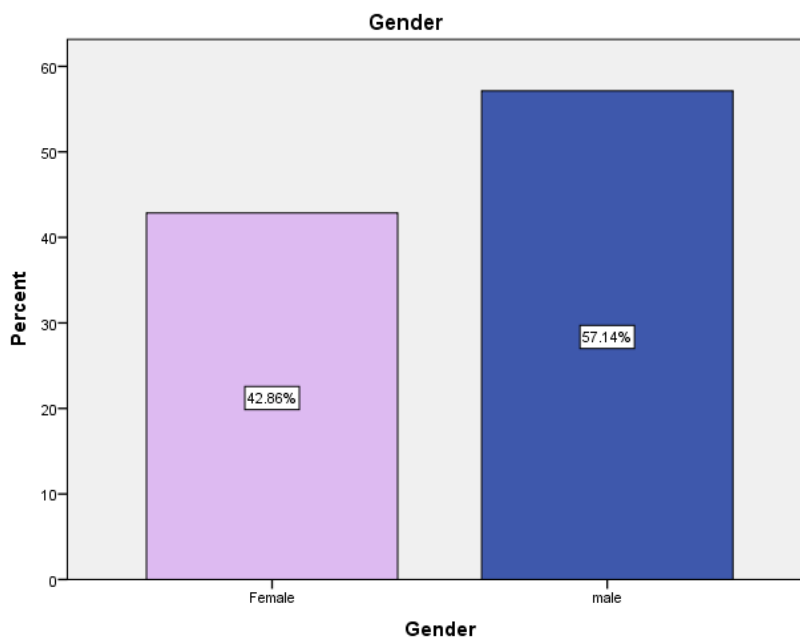
### Results

#### A-Social Demographic Characteristics of the Study Population

**Table 1.** Age of elective surgery patients who were operated on under anesthesia

	N	Minimum	Maximum	Mean	Std. Deviation
Age	70	18.0	84.0	38.371	17.5658
Valid N	70				

**Table 1** shows the age distribution of the patients enrolled in the study. The mean age of the patients was 38.37 with a standard deviation of 17.56. The minimum and maximum ages were 18 and 84 years respectively



**Figure 1.** Gender of elective surgery patients who were operated on under anesthesia

This bar graph shows the gender of the patients enrolled in the study. Out of the total seventy patients, forty (57.14%) were male and thirty (42.86%) were female.

**Table 2.** Educational status of elective surgery patients who were operated on under anesthesia

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Bachelor	3	4.3	4.3	4.3
Illiterate	25	35.7	35.7	40.0
Masters	2	2.9	2.9	42.9
Primary	29	41.4	41.4	84.3
Secondary	11	15.7	15.7	100.0
Total	70	100.0	100.0	

Table 2 provides an overview of the educational status of 70 elective surgery patients who underwent operations under anesthesia. Most of the patients had lower levels of education, with 41.4% having completed only primary education and 35.7% being illiterate. Secondary education was reported by 15.7% of the patients, while those with higher education levels were relatively few, with 4.3% holding a bachelor’s degree and only 2.9% having a master’s degree. The illiterate and primary education groups constituted the vast majority (77.1%) of the sample.

#### B-Factors Related to Preoperative Fasting

While preoperative fasting instructions were given to all patients, none of them were informed of the specific preoperative fasting guidelines that were available. Throughout the data collection period, the operation schedule lists remained in the same order.

The majority of patients, 77.1%, fasted for more than 10 hours before their procedures longer than the preoperative fasting durations advised by the American Society of Anesthesiologists (ASA), Royal College of Anesthetists (RCOA), Royal College of Nursing (RCN), and Association of Anesthetists of Great Britain and Ireland (AAGBI) (Table 3). A significant majority of the patients, 72.9%, fasted for more than 10 hours. The preoperative fasting durations recommended by the AAGBI, ASA, RCOA, and RCN fasting guidelines were exceeded by over 93% of the patients (Table 4).

**Table 3.** Fasting time for food for elective surgery patients operated on under anesthesia

Hours	Frequency	Percent
5 to 6	4	5.7
6 to 7	1	1.4
7 to 8	11	15.7
More than 10	54	77.1
Total	70	100.0

Table 3 highlights the fasting times for food among 70 elective surgery patients operated on under anesthesia. The majority of patients, 77.1%, fasted for more than 10 hours before their procedures. A smaller group, 15.7%, fasted for 7 to 8 hours, while 5.7% reported fasting for 5 to 6 hours. Only 1.4% fasted for 6 to 7 hours, making this the least common duration. This shows that most patients experienced extended fasting times, with relatively few falling within shorter fasting periods.

**Table 4.** Fasting time for fluid for elective surgery patients who were operated on under anesthesia

Hours	Frequency	Percent
Less than 2	0	0
2 to 4	0	0
5 to 6	4	5.7
6 to 7	4	5.7
7 to 8	11	15.7
More than 10	51	72.9
Total	70	100.0

Table 4 summarizes the fasting times for fluids among 70 elective surgery patients who underwent operations under anesthesia. There were none who fasted for less than 4 hours. A significant majority of the patients, 72.9%, fasted for more than 10 hours. Another 15.7% reported fasting for 7 to 8 hours, while smaller groups, each representing 5.7% of the total, fasted for either 5 to 6 hours or 6 to 7 hours. These figures suggest that most patients endured prolonged fasting periods for fluids before their surgery, similar to the trend observed with food fasting.

**Table 5.** Relationship between fasting hours and hunger

Hours	Hunger (frequency)	Percent
Felt no hunger	66	94.28
5 to 6	0	0
6 to 7	0	0
7 to 8	1	1.42
More than 10	3	4.28

The table explores the relationship between fasting hours and feelings of hunger among 70 elective surgery patients. Interestingly, the vast majority of patients, 66 (94.28%), reported feeling no hunger despite their fasting. A small fraction, 4.28%, felt hungry after fasting for more than 10 hours, and only 1.42% reported hunger after fasting for 7 to 8 hours. None of the patients fasting for 5 to 6 or 6 to 7 hours experienced hunger. These results suggest that extended fasting periods did not universally lead to hunger sensations, with most patients seemingly unaffected by the prolonged lack of food.

**Table 6.** Relationship between fasting hours and thirst

Hours	Thirst (frequency)	Percent
Felt no thirst	22	31.42
5 to 6	3	4.28
6 to 7	4	5.71
7 to 8	6	8.57
More than 10	35	50

The table shows the relationship between fasting hours and thirst among 70 elective surgery patients. 22 patients (31.42%) felt no thirst, even after fasting for varying lengths of time. Of those who did experience thirst, 6 (8.6%) had fasted for 7 to 8 hours, 4 (5.7%) for 6 to 7 hours, and 3 (4.3%) for 5 to 6 hours. Half of the patients, 35 (50%), felt thirst after fasting for more than 10 hours. The data indicates that most patients, 48 (68.57%) felt thirst, especially those who fasted for longer periods (more than 10 hours).

## DISCUSSION

This pre-audit, conducted among 70 elective surgery patients operated under general anesthesia, provides valuable insights into preoperative fasting practices in Ayub Teaching Hospital, Abbottabad, Pakistan. The patient population was diverse in age, with a mean of 38.37 years (range: 18–84 years). There was a slight predominance of male patients (57.14%), and most participants had low levels of education, with 35.7% being illiterate and 41.4% having only primary education.

The pre-audit shows critical deviations from recommended preoperative fasting protocols that may adversely affect patient outcomes. According to the guidelines established by the American Society of Anesthesiologists (ASA) and the Association of Anaesthetists of Great Britain and Ireland (AAGBI), patients are advised to consume clear fluids up to two hours and solid food up to six hours before anesthesia. The data from our audit indicates most elective surgery patients fast for fluids much longer than recommended. About 72.9% of patients fast for over 10 hours, which exceeds the standard guidelines. No patients fasted for less than 2 hours or 2-4 hours. Only 15.7% of patients fast for a moderate time of 5-8 hours. Data for pre-op fasting for food shows that most patients (77.1%) fasted for more than 10 hours before their procedures, significantly exceeding standard guidelines. A smaller group (15.7%) fasted for 7 to 8 hours, while 5.7% reported fasting for 5 to 6 hours. Only 1.4% fasted for 6 to 7 hours, making this the least common fasting duration. This shows a need to review and update fasting guidelines for better patient care. These findings indicate a significant lack of adherence to evidence-based practices, likely attributable to systemic deficiencies, including outdated institutional policies, inconsistent staff training, and inadequate patient education. A similar study highlights that excessive preoperative fasting is a widespread issue in hospitals globally, demonstrating a pattern where adherence to established fasting guidelines is often lacking. It suggests that excessive fasting tends to be the norm rather than the exception, further corroborating the findings from the recent audit at Ayub Teaching Hospital <sup>[11]</sup>.

The demographic group in our audit has a significant issue regarding the educational backgrounds of elective surgery patients, with 35.7% being illiterate and 41.4% having only primary education. This limited education may hinder compliance with preoperative fasting protocols. Other studies have shown that of the patients who were even given written instructions allowing them to drink fluids before 3 hours of surgery, only about 40% consumed drinks after midnight <sup>[12]</sup>. To improve adherence and patient outcomes, it is essential to implement tailored education strategies that effectively convey the importance of these guidelines. Clear, accessible information will help patients understand the significance of fasting for their recovery and enhance overall care standards.

Prolonged fasting has noteworthy implications for perioperative patient care. Extended fasting can lead to dehydration, electrolyte imbalances, and increased risks of perioperative complications, ultimately delaying recovery. The study conducted in 2020 prolonged preoperative fasting and prognosis in critically ill gastrointestinal surgery patients found that patients with regular preoperative

fasting times had significantly better outcomes than those with prolonged fasting. They had shorter durations of mechanical ventilation, averaging 245 minutes compared to 315 minutes, and fewer postoperative myocardial injuries (2 cases vs. 11 cases). The reoperation rate was also lower, with no cases in the regular fasting group compared to 7 in the prolonged fasting group. Additionally, postoperative fasting was shorter for those who adhered to regular fasting, averaging 6.0 hours versus 8.0 hours. These results highlight the benefits of following recommended fasting protocols for improved surgical outcomes and recovery<sup>[13]</sup>. Enhanced Recovery after Surgery protocols have repeatedly led to reduced hospital stay and improved surgical outcomes.<sup>[14]</sup>

Evidence suggests that reduced fasting durations for clear fluids correlate with a lower incidence of postoperative nausea and vomiting (PONV) without heightening the risk of aspiration. The duration of preoperative fasting is an important internal patient factor influencing the incidence of postoperative nausea and vomiting (PONV). According to a recent study, patients who fasted for 6 to 8 hours experienced less occurrence of PONV compared to those who fasted for more than 8 hours. Moreover, prolonged fasting exacerbates insulin resistance and catabolic states, thereby delaying recovery and increasing susceptibility to infections<sup>[15]</sup>. Notably, 48 (68.57%) of patients in our audit experienced significant thirst, especially those fasting for more than 10 hours 35 (50%), highlighting the urgent need for enhanced fluid management in the preoperative period.

To address these pressing issues, a series of systemic reforms are recommended. Hospitals should urgently revise fasting protocols to align with contemporary evidence, explicitly permitting clear fluids for up to two hours and solid food up to six hours before surgery. It is essential to provide regular training to perioperative staff to ensure consistent implementation and communication of these updated guidelines. Additionally, patient education must be improved by providing clear, culturally relevant materials that facilitate understanding, particularly for individuals with lower literacy levels. The introduction of dynamic scheduling systems can effectively reduce unnecessary delays and mitigate prolonged fasting periods. Furthermore, establishing routine audits and feedback mechanisms is critical for monitoring adherence to updated protocols and fostering continuous quality improvement.

Although data were collected prospectively, there was reliance on patient participation and recall, with additional potential problems with bias. This study could not address whether patients who fasted for prolonged periods had significantly different postoperative outcomes compared to patients who fasted by current guidance. Further research specifically looking at postoperative outcomes and length of preoperative fasting is required to address this.

## Conclusion

In conclusion, this audit has illuminated significant noncompliance with established preoperative fasting practices, with a predominant number of patients fasting for durations well beyond recommendations. Such extended fasting periods escalate patient discomfort and increase the risks of dehydration, PONV, and delayed recovery. The existing literature firmly supports the safety and efficacy of shorter fasting durations, underscoring the necessity for the implementation of evidence-based practices. By addressing these systemic shortcomings through policy updates, comprehensive staff training, and operational enhancements, healthcare institutions can markedly improve patient outcomes and ensure alignment with international standards of care.

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