



SAINT PAUL'S HOSPITAL MILLENIUM MEDICAL COLLEGE

**DEPARTMENT OF ANESTHESIOLOGY, CRITICAL CARE AND PAIN
MEDICINE**

**PREOPERATIVE FASTING TIME AND FACTORRS AFFECTING
ADHERENCE TO PREOPERATIVE FASTING TIME AMONG ADULT
PATIENT UNDERGOING ELECTIVE SURGERY AT SIANT PAUL'S
HOSPITAL MILLENNIUM MEDICAL COLLEGE**

BY: WAKJIRA LEMMA (MD, YEAR III RESIDENT)

**A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF
ANESTHESIOLOGY CRITICAL CARE AND PAIN MEDICINE FOR
THE REQUIREMENT OF CERTIFICATION OF SPECIALITY IN
ANESTHESIOLOGY CRITICAL CARE AND PAIN MEDICINE**

MARCH 2024

ADDIS ABABA, ETHIOPIA

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ABBREVIATION AND ACRONYM

AOR: Adjusted Odds Ratio

ASA PS: American society of anesthesiology Physical Status

CI: Confident Interval

COR: Crude Odds Ratio

CS: Cesarean Section

ENT: Ear Nose and Throat

IQR: Interquartile Range

OR: Operation Room

POF: Preoperative Fasting

SD: Standard Deviation

SPHMMC: Saint Paul hospital Millennium Medical College

SPSS: Statistical Package for the Social Sciences

UK: United Kingdom

ABSTRACT

Introduction: Preoperative fasting is a time-tested professional practice that is undertaken for physiological and precautionary benefits to the patients globally. Adherence to preoperative fasting guidelines is crucial for ensuring patient safety and minimizing complications during surgical procedures.

Objective: This study aimed to assess preoperative fasting times and factors affecting adherence to fasting guidelines among adult patients undergoing elective surgery at St. Paul's Hospital Millennium Medical College.

Methods: A cross-sectional study was conducted involving 277 patients who underwent elective surgery at St. Paul hospital Millennium Medical Collage. Stratified sampling technique was used to assign sample for each stratum (type of surgery) and systematic random sampling technique was used to select participants from each stratum. Data on sociodemographic and clinical characteristics, preoperative fasting instructions, knowledge, and actual fasting times were collected using a structured questionnaire. Descriptive statistics and logistic regression analyses were performed to identify factors associated with adherence to fasting guidelines. Statistical significance of $P < 0.25$ for bivariate regression and $P < 0.05$ for multivariate regression were considered.

Result: The majority of patients fasted considerably longer than recommended, with mean fasting times of 9.76 ± 3.21 hours for clear fluids, 10.84 ± 2.92 hours for semi-solids, and 11.92 ± 2.89 hours for solids. Only 10.9% of patients knew the importance of fasting before surgery, and 92.7% did not receive information about why avoiding food and fluids was necessary. Factors significantly associated with poor adherence to fasting guidelines included being scheduled second or later for surgery (AOR: 5.199, 95% CI: 1.412-19.143) and having no previous history of surgery (AOR: 8.746, 95% CI: 2.462-31.072).

Conclusion: Prolonged preoperative fasting times and poor adherence to fasting guidelines were observed among the study participants. Patient education, standardized protocols, and multidisciplinary collaboration are recommended to improve adherence, enhance patient safety, and promote better anesthesia and surgical outcomes.

Keywords: Preoperative fasting, adherence, elective surgery, patient education, surgical outcomes

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND

Preoperative fasting is a time-tested professional practice that is undertaken for physiological and precautionary benefits to the patients globally. Patients are deprived of certain and/or all foods and drinks for specific duration before surgery (1). The importance of preoperative fasting was first recognized in the 19th century, following reports of pulmonary aspiration events and associated mortality during anesthetic procedures. In the mid-20th century, Dr. Curtis Mendelson's seminal work highlighted the risks of regurgitation and aspiration of gastric contents during obstetric anesthesia, leading to the development of the first set of fasting guidelines (2).

The current guidelines for preoperative fasting are designed to balance the risk of pulmonary aspiration with patient comfort and well-being. The recommended fasting times vary depending on the type of intake. For elective surgical patients of all age, a minimum of 2 hours of fasting for clear liquids, 4 hours for breast milk, and 6–8 hours for non-human milk and solid foods is recommended before anesthesia requiring general anesthesia, regional anesthesia, or procedural sedation and analgesia (1,3)

Examples of clear liquids include water, fruit juices without pulp, carbonated beverages, clear tea, and black coffee. Because nonhuman milk is similar to solids in gastric emptying time, the amount ingested must be considered when determining an appropriate fasting period. A light meal typically consists of toast and clear liquids. Meals that include fried or fatty foods or meat may prolong gastric emptying time. Additional fasting time (*e.g.*, 8 h or more) may be needed in these cases. Both the amount and type of food ingested must be considered when determining an appropriate fasting period (1)

Although fasting is associated with adverse effects, a stomach as empty as possible is desirable before anesthesia to reduce the risk of passive regurgitation and pulmonary aspiration of stomach contents. A residual gastric volume of less than 1.5 ml/kg has been deemed an acceptable volume for baseline risk of aspiration. It is often assumed that fasting results in low gastric residual stomach volume, and also that after a fast, with no stimulus for gastric acid production, the pH of any stomach fluid will be higher and therefore less irritating to the lungs

in the event of aspiration. This practice of preoperative fasting plays a crucial role in ensuring patient safety and minimizing potential risks during surgical procedures. Fasting guidelines have been established to reduce the likelihood of pulmonary aspiration of gastric contents, a potentially life-threatening complication that can occur during the induction of anesthesia or in the postoperative period (4). However, there is substantial evidence that fasting does not reliably result in an empty stomach or fluid with higher pH (5)

Despite the well-established guidelines and recognized benefits of adherence, various studies have reported suboptimal compliance with preoperative fasting recommendations (6,7).

1.2. STATEMENT OF THE PROBLEM

Preoperative fasting is a critical aspect of patient preparation for surgical procedures. Despite the well-established guidelines and recognized importance of adherence, various studies have reported suboptimal compliance with preoperative fasting recommendations across different healthcare settings(8,9,10). This non-adherence to fasting guidelines can have significant consequences for patient safety, surgical outcomes, resource utilization, and overall healthcare costs.

If patients allowed to fast longer than what is recommended in the ASA preoperative fasting guideline, they tend to develop the negative effects of prolonged fasting which have been viewed as an unavoidable inconvenience associated with anesthesia and surgery as well as unpleasant symptoms of thirst, hunger, anxiety, and malaise, increased incidence of postoperative nausea and vomiting, and may be the cause of significant patient dissatisfaction. Also, if the patient allowed to fast lower time than what is recommended in the ASA preoperative fasting guideline, they tend to develop perioperative pulmonary aspiration. Preoperative dehydration caused by excessive fasting may contribute to hypovolemia and hemodynamic instability during anesthesia. Hypovolemia has negative effects on cardiac output and oxygen delivery (5).

Addressing the problem of non-adherence to preoperative fasting guidelines is crucial for ensuring patient safety, optimizing surgical outcomes, and promoting efficient resource utilization in healthcare settings. However, to develop effective interventions and strategies, a comprehensive understanding of the underlying factors contributing to non-adherence in specific healthcare contexts is essential. Conducting research to identify and analyze the factors influencing adherence to preoperative fasting guidelines is a critical step in addressing this problem. By examining the prevalence of non-adherence, patient knowledge and understanding, healthcare provider practices, institutional protocols, and potential barriers or facilitators to compliance, researchers can provide valuable insights to inform targeted interventions and quality improvement initiatives. Furthermore, investigating the impact of non-adherence on patient outcomes, resource utilization, and healthcare costs can highlight the significance of this problem and underscore the need for concerted efforts to address it.

1.3. SIGNIFICANCE OF THE STUDY

The proposed study investigating adherence to preoperative fasting guidelines and the factors influencing compliance holds significant importance from multiple perspectives, including patient safety, surgical outcomes, resource utilization, and overall healthcare quality. The findings of this research have the potential to make valuable contributions to clinical practice, healthcare policy, and future research endeavors. So that this particular study will help to:

- ✓ Provide feedback about the existing practice of preoperative fasting time
- ✓ Encourage the College to develop its own preoperative fasting guideline.
- ✓ Inform the development of educational and training programs for healthcare providers, including surgeons, anesthesiologists, residents nurses, and Others
- ✓ Serve as valuable secondary data for further research purpose.

CHAPTER TWO: LITERATURE REVIEW

2.1. Preoperative Fasting Practices Across Different Countries and Regions

Preoperative fasting is a standard procedure aimed at reducing the risk of aspiration during anesthesia induction. However, the duration of fasting varies widely across different countries and regions, as evidenced by several studies conducted globally. For instance, A descriptive study conducted on 250 patients who scheduled for elective eye surgery in a university educational ophthalmology hospital in Tabriz, Iran showed that Fasting duration from heavy and light meal and clear liquids was 14.31 hours (8 - 23 hours), 12.46 hours (6 - 21 hours) and 11.54 hours (3 - 18 hours), respectively, that was not consistent with ASA guidelines, with discontent among patients regarding the prolonged fasting period (11).

Similarly, a prospective audit over a two-month period at five National Health Service (NHS) Trusts across the East Midlands region of the UK performed in on 343 surgical patients showed that Overall median fasting times were 16.1 (13.0, 19.4) hours for food and 5.8 (3.5, 10.7) hours for clear fluids. Prolonged fasting >12 h was documented in 73% (n = 250) for food, and 21% (n = 71) for clear fluids (12).

Studies from Brazil, Rasht in Iran, South Africa, Kenya, Botswana, and Gondar, Africa, further underscored variations in preoperative fasting practices across diverse healthcare settings (8,13–17).

The duration of fasting for solid foods and clear liquids also exhibited notable discrepancies across studies. In Tabriz, Iran, patients experienced varying fasting durations for heavy meals, light meals, and clear liquids, with considerable deviation from recommended guidelines. From the study it was found that the discontent of the patients from prolonged NPO time was 60.8%. The most complaint was thirsty (42%). Ward nurses were the personnel who had the primary role in patients fasting time period (47.6%) (11). Similarly, studies from the Brazil, Gondar in Ethiopia, and Addis Ababa, Ethiopia, reported inconsistent fasting periods for both solid foods and clear liquids (9,10,14).

2.2. Adherence to Fasting Guidelines

Despite established guidelines, adherence to preoperative fasting recommendations remains a challenge in many healthcare settings. Studies across different regions consistently reported

deviations from fasting guidelines, with a substantial proportion of patients experiencing prolonged fasting durations beyond recommended limits. For instance, a 2-center observational study with a 10-year interval was performed in the Netherlands. In period 1 (2009), preoperative fasting time was observed as primary outcome. In period 2 (2019), preoperative fasting and postoperative restoration of oral intake were observed. Duration of preoperative fasting was prolonged in 290 (90.3%) patients for solid foods and in 208 (67.8%) patients for clear liquids. Median duration of preoperative fasting from solid foods and clear liquids was respectively 2.5 and 3 times the recommended 6 and 2 hours, with no improvements from one period to another (18).

Another cross-sectional study which was conducted from March 10 to April 10, 2013 in an African academic medical center in Gondar, 43 patients was included in the study, 35 were adults and 8 were children. The minimum, maximum, and mean fasting hours for food were 5, 96, and 19.60, respectively, and more than 50 % of the patients fasted from food twice as long as recommended. The minimum, maximum, and mean fasting hours for fluid were 5, 19, and 12.72, respectively. More than 95 % of the patients fasted from fluid longer than recommended. Most patients fasted from both food (92 %) and fluid (95 %) longer than the fasting time recommended by the fasting guidelines (20). Moreover, discrepancies between prescribed fasting instructions and actual fasting practices were evident (9).

2.3. Patient Knowledge Regarding Preoperative Fasting

Patient understanding of preoperative fasting instructions are essential for compliance and overall perioperative experience. Studies revealed varying levels of patient knowledge regarding fasting requirements, with dissatisfaction reported due to prolonged fasting durations and unclear instructions. In Kenya, for example, the majority of patients lacked understanding of the reasons for prolonged fasting, resulting in dissatisfaction with the fasting process (8). Similarly, studies from Botswana and Addis Ababa, Ethiopia, highlighted patient lack of understanding with fasting instructions provided by healthcare personnel (10,16).

2.4. Healthcare Personnel Roles and Patient Instructions

The roles of healthcare personnel in administering preoperative fasting instructions varied across studies. While ward nurses were the primary personnel responsible for providing fasting instructions in some settings, studies also reported involvement from anesthesiologists, surgeons,

and interns (8,10). For example, a hospital-based cross-sectional study conducted on 422 adult patients at selected public hospitals of Addis Ababa showed that more than half 242(57.3%) of patients were informed by ward nurses followed by interns 98(23.2%), and the remaining were informed by surgeons and anesthetists (10).

However, inconsistencies in the delivery of fasting instructions and patient education were evident, contributing to patient dissatisfaction and non-adherence to fasting protocols. A descriptive cross-sectional study done in 2017 in Kenyan Referral Hospital showed that of the respondents 93.8% lacked knowledge on the correct reasons for POF and felt that the instructions were unclear and less important < 50%. POF instructions were administered by nurses 80%, anesthetists 15%, and surgeons 5%. Most of respondents (73.8%) fasted > 15 hours. The POF outcomes were rated moderately challenging as follows: prolonged wait for surgery 44.6%, thirst 43.1%, hunger 36.9%, and anxiety 29.2% (8).

Conceptual framework

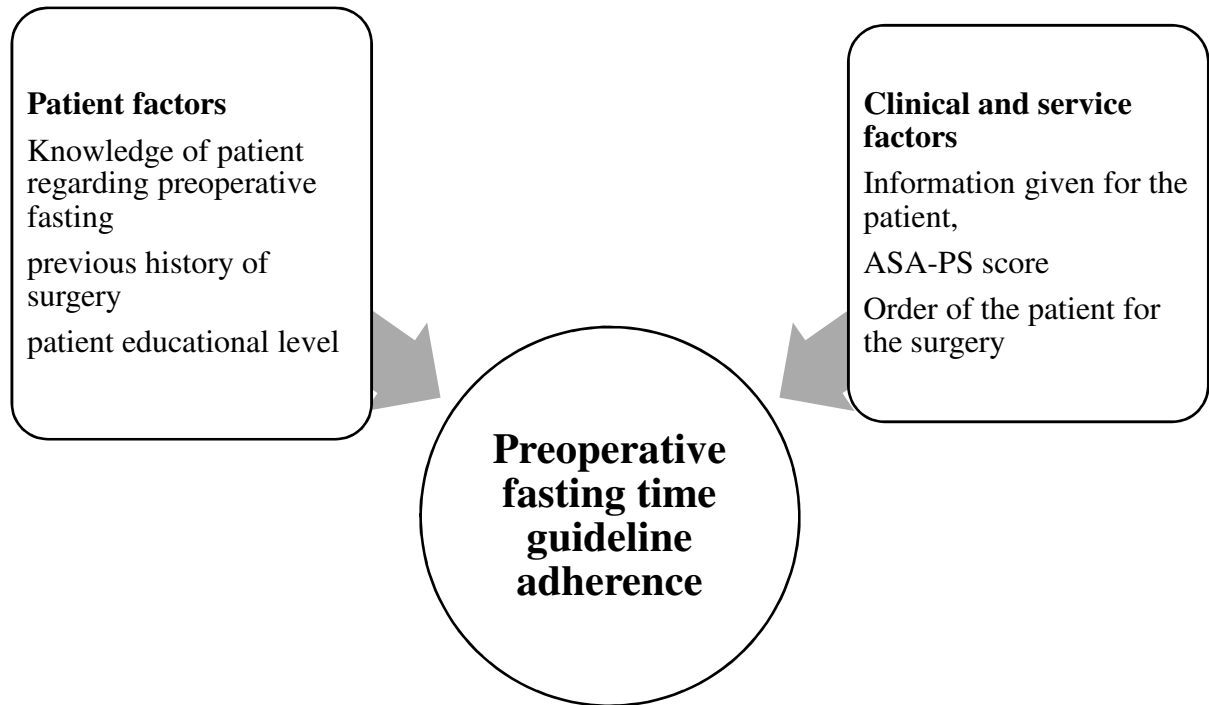


Figure 1: Conceptual framework of adherence to preoperative fasting time guideline (8,10)

The above conceptual framework delineates the key factors affecting preoperative fasting duration. Knowledge of patient regarding preoperative fasting, previous history of surgery, patient educational level, the information given for the patient, ASA-PS score and order of the patient for the surgery were included as independent factors affecting preoperative fasting duration.

CHAPTER THREE: OBJECTIVE OF THE STUDY

3.1. General objective

To determine Preoperative Fasting time and factors affecting adherence to preoperative fasting time among adult patient undergoing elective surgery at St. Paul hospital millennium medical collage

3.2. Specific objectives

- To assess preoperative fasting time among adult patient undergoing elective Surgery at St. Paul hospital millennium medical collage
- To determine factors affecting adherence to preoperative fasting time among adult patient undergoing elective Surgery at St. Paul hospital millennium medical collage

CHAPTER FOUR: METHODS

4.1. Study Setting

The study was conducted at St. Paul's Hospital Millennium Medical College located in Addis Ababa, Ethiopia. St. Paul's hospital Millennium Medical College, as it is known today, was established through a decree of the Council of Ministers in 2010, although the medical school opened in 2007 and the hospital was established in 1968 by the late Emperor Haile Selassie. The inpatient capacity is more than 700 beds sees an annual average of 300,000 patients. It has a catchment population of more than 5 million. The College sees an average of 1200 emergency and outpatient clients daily. St. Paul's Hospital Millennium Medical College has 18 major functional operating rooms for Elective surgery and 5 tables for emergency surgery including; orthopedic, urosurgery, gynecology, pediatric, plastic, otolaryngology, maxillofacial, chest, general surgery and neurosurgery.

Currently, the Department of Anesthesiology, Critical Care, and Pain Medicine has 17 consultant Anesthesiologists, 64 Anesthesiology residents and 48 Anesthetist.

4.2. Study Design and period

A hospital based cross-sectional study was conducted to assess Preoperative Fasting time and factors affecting adherence to preoperative fasting time among adult patient undergoing elective surgery at SPHMMC from August 1, 2023 to September 30, 2023.

4.3. Populations

Source population

All patients scheduled for the surgery at SPHMMC.

Study population

All elective adult patients scheduled for elective surgery and fulfilled inclusion criteria within the study period

4.4. Eligibility Criteria

Inclusion criteria

- All patients 15 years old and above scheduled for elective general surgery.

Exclusion criteria

- Patients who underwent emergency surgery, cesarean Section, minor surgery and pediatrics surgery.
- Patients who had cancelled from the surgery.

4.5. Study variables

Dependent Variables

- ✓ Preoperative fasting duration

Independent Variables

- Sociodemographic characteristics: Age, Educational Status, sex
- Clinical characteristics: Order of schedule, Type of surgery, Knowledge of Fasting Time, American Society of Anesthesiology Physical Status, Duration of preceding surgery Previous history of surgery, Source of information

4.6. Operational definition

Preoperative fasting time: a prescribed period of time before a procedure when patients are not allowed the oral intake of liquids or solids

Elective surgery: a surgical procedure which is scheduled in advance and is not considered an emergency.

Fasting: The act of abstaining from food, drink or both for a period of time.

Fasting practice: how patients were fasted prior to surgery.

Instructed fasting time: the time from when the patient was instructed to begin fasting until the time that surgery was scheduled to commence.

Actual fasting time: the time from the most recent consumption of any liquid or solid, excluding sips of water taken with morning medication until the surgery starting time.

Preoperative pulmonary aspiration is aspiration of gastric contents occurring after induction of anesthesia, during a procedure, or in the immediate postoperative period

American Society of Anesthesiologists (ASA) physical status:

ASA 1: Normal healthy patient; ASA 2: Patient with mild systemic disease; ASA 3: Patient with severe systemic disease; ASA 4: Patient with severe systemic disease that is a constant threat to life; ASA 5: Moribund patient who is not expected to survive without the operation; and ASA 6: Brain-dead patient whose organs are being removed for donor purpose.

4.7. Sample size determination and sampling technique

Sample size determination

The sample size calculation is based on a single population proportion formula by taking the prevalence of preoperative fasting practice as 50% with a 5% margin of error at 95% confidence interval. So, the sample size is calculated as

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{D^2}$$

$$= (1.96)^2(0.5) * (0.5) / (0.05)^2 = 384$$

The number of cases done in last 2 months in each table was orthopedics (90), general surgery (320), neurosurgery (50), cardiothoracic (32), urosurgery (23), ENT and Maxillofacial (150) and gynecology (100). A total of 764 cases, since it is <10000 correctional formulas was used as follows

$$NF = \frac{n}{\left(1 + \frac{n}{N}\right)}$$

Where:

NF = the desired sample size when population is less than 10,000

n = the desired sample size

N = the estimate of the population size

The sample size NF = 384 / { 1 + (384/764) } = 256

With an addition of 10% for non-respondents the final required sample size is 281.

Sampling technique

A study participant was selected using stratified sampling technique to assign sample for each stratum (table) and systematic random sampling technique was used to select from each stratum (table) as follows

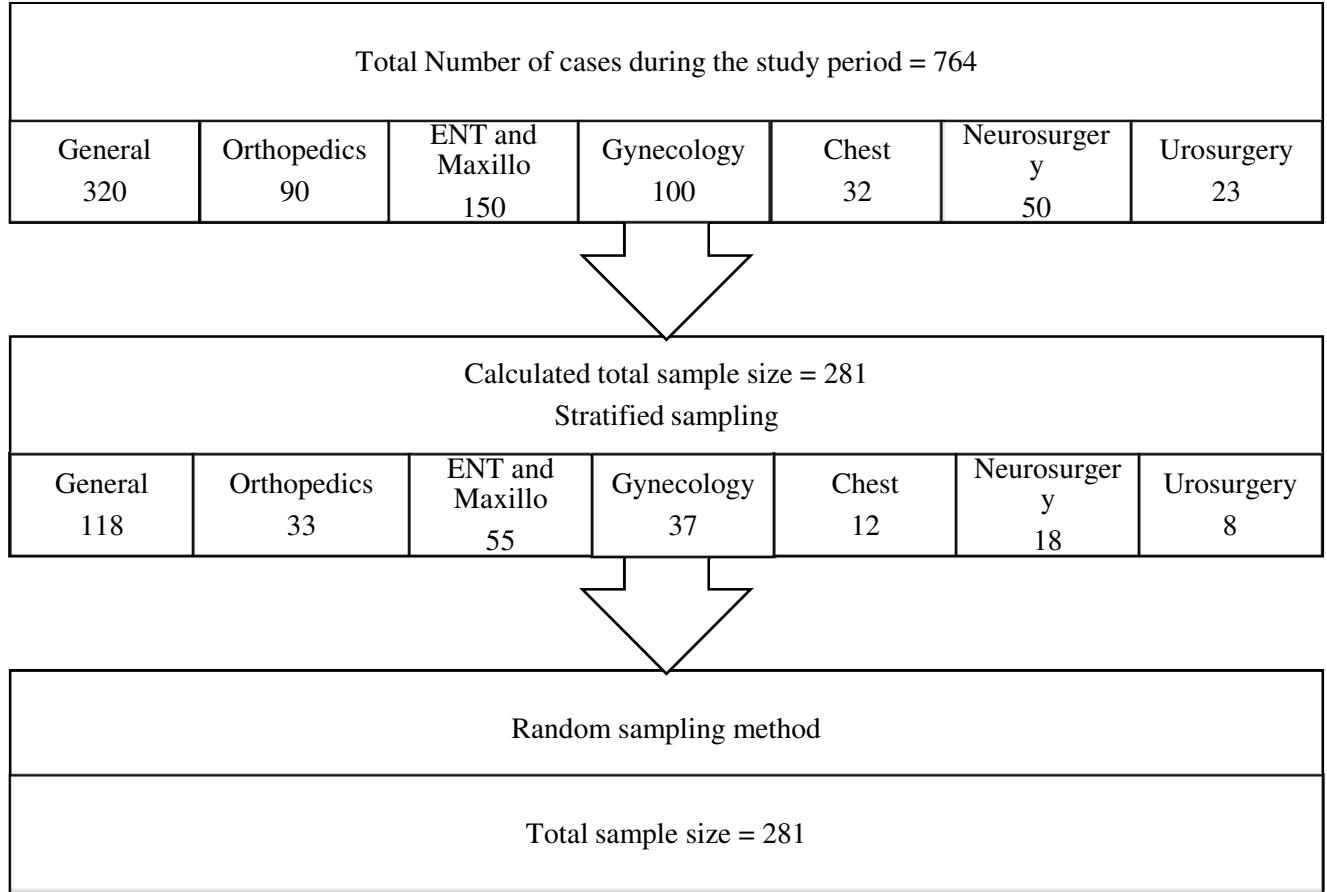


Figure 2: Schematic diagram of sampling technique

4.8. Data collection

Data were collected using a structured written questionnaire prepared in English language and was translated into Amharic and Afan Oromo language. Prior to Data collection orientation about the data collection tool was given and data collection was carried out by anesthesia residents and anesthetists and was supervised by the principal investigator.

Electronic collection method using a mobile application (Kobo toolbox) was used. The Amharic and English version of the questionnaire was uploaded to Kobo toolbox, and Kobo collect, which is a mobile application for data collection, was used to collect the data. The data was collected through face-to-face interview from selected patients. Completed questionnaires were saved in the mobile devices and were sent to the central server immediately after

completing the interview. In cases where the data collectors cannot complete the questionnaires and when an internet connection cannot be accessed, the completed questionnaires were forwarded when there is an internet connection available. The data collection was managed directly from the principal investigator's server. Each data collector and supervisor did have a code to make data management easy.

4.9. Data quality assurance

The quality of data was controlled starting from the time of questionnaires preparations. The questionnaire is developed by reviewing relevant literatures on the subject to ensure reliability. First the questionnaire, which was prepared in English, is translated into Amharic and Afan Oromo. To ensure the consistency of the tool, it was translated back to English language.

Orientation was provided prior to the study for supervisor and data collectors on the purpose of study, procedures of data collection and explaining on 'how to use Kobo to collect data' with examples demonstration of the features of the application. There was Periodic supervision and technical support by the principal investigator for data collectors.

4.10. Data processing and analysis

The collected data were cleaned and entered directly during the time of data collection since Kobo collect Version 1.27.3 was used. Then, the data were exported to SPSS version 25 for further analysis. Descriptive analysis was performed to describe number and percentage of sociodemographic characteristics of categorical variables. Continuous variables were expressed in median and interquartile range (IQR) or mean and standard deviation. The strength of association between variables were determined using bivariate and multivariable logistic regression, and odds ratios, with 95% confidence intervals. Statistical significance was $P < 0.05$ for bivariate regression and $P < 0.05$ for multivariate regression. Microsoft Excel was used to make graphs and charts. A P-value of ≤ 0.05 was considered statistically significant. Tables, figures, charts and texts used for data presentation.

4.11. Ethical considerations

Ethical approval was sought from the Institutional Research Review Boards (IRBs) of St. Paul's Hospital Millennium Medical College. Then, permission to carry out the study was sought from SPHMMC Hospitals' administrations and a formal letter of support was obtained

from the hospitals. Participation in the study was on voluntary basis. After a detailed explanation of the study purpose, written informed consent was sought from patients. Confidentiality and privacy of the participant has been maintained throughout the process of data collection. The data collection teams were trained on how to handle sensitive and emotional issues and on the importance of keeping confidentiality and participants were free to decline or withdraw from participating in the study at any time during the study period.

4.12. Dissemination plan of findings

The result of the study is going to be presented for research defense and a formal report will be submitted to department of anesthesiology and critical care of SPHMMC. In addition, the final report will be archived in the SPHMMC library. Furthermore, the findings of this study will be disseminated for publication in national or international peer reviewed reputable journal. The study will also be presented during various research symposiums, conferences or on seminars.

CHAPTER FIVE: RESULT

5.1. Sociodemographic characteristics of participants

Of those patients who underwent elective surgery during the study period, 277 patients were participated in the study (response rate of 98.6%). Male patients accounted for 138 (49.8%) of the cases. The mean age with standard deviations (SD) of the participants was 44.58 ± 16.27 years of which 102 (36.8%) were 50 years old and above. The range of participants age was 15-96 years. In this study, 42 (15.4%) patients had no formal education, while 91 (33.3%) and 89 (32.1%), of patients did complete secondary school and college/university, respectively.

Table 1: Sociodemographic characteristics of respondents

Variable	Response	Frequency	Percent
Sex (N=277)	Male	138	49.8
	Female	139	50.2
Age (N=277)	Mean $\pm$ SD	44.58 $\pm$ 16.27	
	<30	57	20.6
	30-39	62	22.4
	40-49	56	20.2
	>50	102	36.8
Educational Status (N=273)	No education	42	15.4
	Primary education	51	18.7
	Secondary education	91	33.3
	Higher level education	89	32.6

5.2. Clinical Characteristics of Study Participants

The majority 189 (68.2%) of the patients were ASA class I and only 4 (1.4%) of patients were ASA class III.

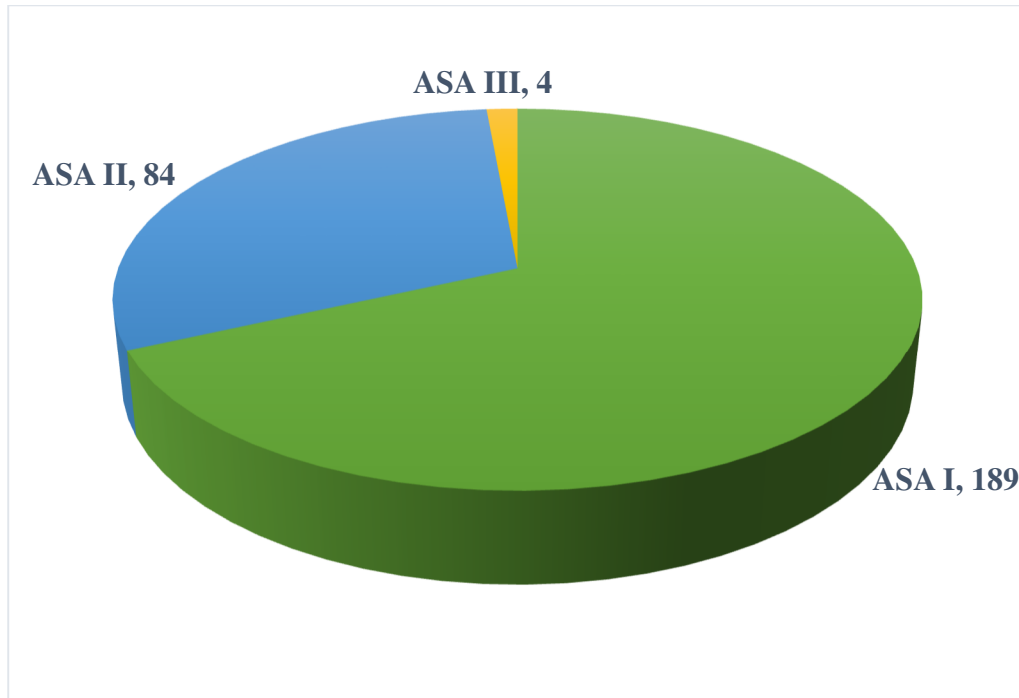


Figure 3: American Society of Anesthesiology physical Status

Only 36 (13.2%) of the patients had history of previous surgery. Of the participants, 202 (72.9%), 64 (23.1%), 8 (2.9%) and 3 (1.1%) of participants were under general anesthesia, spinal anesthesia, sedation and Nerve block respectively.

Table 2: Clinical characteristics of respondents

Variable	Response	Frequency	Percent
Previous history of surgery (N=273)	Yes	36	13
	No	241	87
Type of anesthesia (N=277)	General anesthesia	202	72.9
	Spinal	64	23.1
	Sedation	3	1.1
	Nerve block	8	2.9
Order of the patient schedule (N=271)	1	121	44.6
	2	94	34.7
	3	46	17.0
	4	8	3.0
	5	2	0.7

5.3. Preoperative information and knowledge of study participants

All patients were given instructions about preoperative fasting. 216 (78%) participants were told to fast for solid food minimum 8 hrs. before surgery and for semisolid food minimum 6 hrs. before surgery, while 64 (23.1%) were instructed to fast from any food and liquid after midnight. Majority 250 (90.3%) of the patients were instructed by Anesthesiology residents and only 18 (6.5%) of patients were told to fast by nurses. Majority of the patients 255 (92.7%) responded that they were not given any information on why it is important to avoid food and fluids before surgery.

Table 3: Preoperative information assessment of study participants

Variable	Response	Frequency	Percent
Source of preoperative fasting instruction	Nurses	18	6.5
	Anesthesiology resident	250	90.3
	Surgery resident	63	22.7
Instructions given to fast	Don't take any food or liquid after mid night	64	23.1
	You should fast for solid food minimum 8 hrs. before surgery	216	78.0
	You should fast for Semisolid food minimum 6 hrs. before surgery	216	78.0
	You should fast for liquid Minimum of 2hrs before surgery	213	76.9
Information given about why it is important to avoid food and fluids before Surgery	Yes	20	7.3
	No	255	92.7

Only 30 (10.9%) of the patients know the importance of fasting before surgery. One hundred eighty-three (67.8%) of patients don't know for how long they fast before surgery, while 35 (13.0%) said they think it is more than 8hrs.

Table 4: Knowledge of study participants

Variable	Response	Frequency	Percent
Know the importance of fasting before surgery	Yes	30	10.9
	No	246	89.1
How long do you think to fast before surgery?	2 hrs.	7	2.6
	4 hrs.	11	4.1
	6 hrs.	20	7.4
	8 hrs.	14	5.2
	>8 hrs.	35	13.0
	I don't Know	183	67.8

5.4. Duration of Preoperative Fasting and adherence to the preoperative fasting guideline

With regards to the actual preoperative fasting time for clear fluids, semi solids and solids, the majority of the patients fasted considerably longer than the recommended fasting times. The mean actual fasting time for clear fluids was 9.76 ± 3.21 hrs. [median 10.0 (IQR 8.0-12.0; range 2-17) hrs.], for semi solids was 10.84 ± 2.92 hrs. [median 11.0 (IQR 9.0-13.0; range 4-24) hrs.] and for solids 11.92 ± 2.89 hrs. [median 12.0 (IQR 10.0-14.0; range 6-24) hrs.].

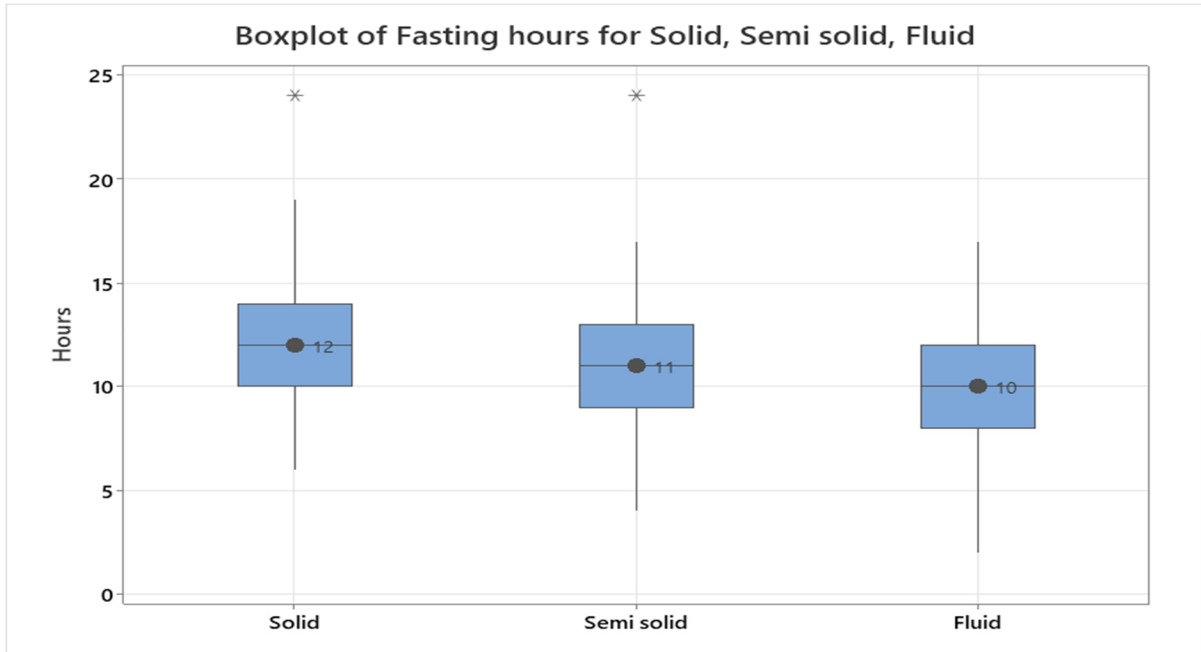


Figure 4: Actual fasting time (h) for clear fluids, semi solids and solids. Data are expressed as medians, 25 and 75% percentile, whiskers are highest and lowest values that are not outliers.

The majority 159 (93.5%) of patients have fasted from solid foods longer than 8 hours. Also, 236 (85.2%) of patients have fasted from clear liquids longer than 2 hours. In total, only 18 (6.5%) patients had actual preoperative fasting time in accordance with the guideline.

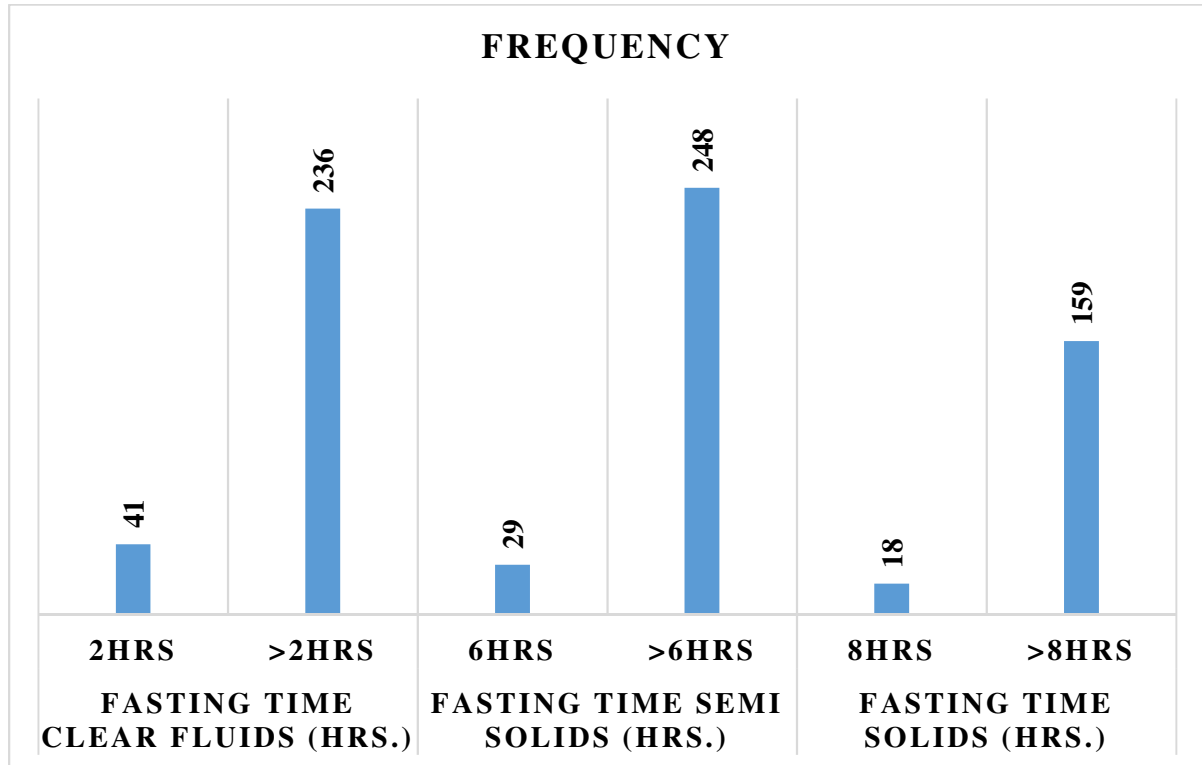


Figure 5: Duration of Preoperative Fasting among the Respondents

5.2. Factors related to guideline adherence to preoperative fasting

To identify factors associated with guideline adherence to preoperative fasting, logistic regression model was used. Variables that were used in bi-variable regression with the crude odds ratios (COR) and P value ≤ 0.25 associated with poor guideline adherence includes patient educational status, order of patient's schedule for surgery, previous history of surgery and knowledge on the importance of preoperative fasting.

Then multivariable logistic regression analysis was used to adjust possible confounders. In multivariable logistic regression analysis factors that were significantly associated which showed p-value of below 0.05 with the outcome variable were order of patient's schedule for surgery, and previous history of surgery. In this analysis, the model explained 8.7 to 24.5% of the variation (Cox and Snell $R^2=0.087$, Nagelkerke $R^2=0.245$) in guideline adherence.

Patients who were scheduled as second and above for surgery were 5.2 times higher to have poor guideline adherence to preoperative fasting than those who were first scheduled [AOR: 5.199, 95%CI: (1.412,19.143)]. Also, patients who had no previous history of surgery had 8.7 times higher odds of poor guideline adherence to preoperative fasting compared to those who had previous surgery [AOR: 8.746, 95% CI:(2.462,31.072)].

Table 5: Bi-variable and multivariable logistic regression for adherence to guideline of preoperative fasting in patient that undergone surgery in SPHMMC, 2024

Variable	Guideline adherence		COR ¹ (95% CI)	P-value	AOR ² (95% CI)	P-value
	Yes (%)	No (%)				
Patient educational status						
No educ/Primary	8 (44.4)	85 (33.3)	1		1	
Secondary	3 (16.7)	88 (34.5)	2.761 (0.709,10.756)	0.143*	2.064 (0.412,10.333)	0.378
College	7 (38.9)	82 (32.2)	1.103 (0.382,3.178)	0.857	0.579 (0.159,2.112)	0.408
Order of patient's schedule						
First	12 (75.0)	109 (42.7)	1		1	
Second and above	4 (25.0)	146 (57.3)	4.018 (1.262,12.799)	0.019*	5.199 (1.412,19.143)	0.013*
Previous surgery						
Yes	9 (52.9)	27 (10.5)	1		1	
No	8 (47.1)	209 (89.5)	9.542 (3.398,26.794)	<0.001*	8.746 (2.462,31.072)	<0.001*
Know importance of fasting						
Yes	6 (33.3)	24 (9.3)	1		1	
No	12 (66.7)	234 (90.7)	4.875 (1.678,14.159)	0.004*	3.012 (0.824,11.014)	0.096
Information received on why to fast						
Yes	2 (11.1)	18 (7.0)	1		-	-
No	16 (88.9)	239 (93.0)	1.660 (0.354,7.789)	0.521	-	-
ASA						
ASA I	12 (66.7)	177 (68.3)	1		-	-
ASA II and III	6 (33.3)	82 (31.7)	0.927 (0.336,2.555)	0.883	-	-

¹ COR – Crude odds ratio

² AOR – Adjusted odds ratio

CHAPTER SIX: DISCUSSION

The preoperative fasting time and adherence to fasting guidelines are crucial aspects of ensuring patient safety and minimizing potential complications during surgical procedures. This study, titled "Preoperative Fasting Time and Factors Affecting Adherence to Preoperative Fasting Time Among Adult Patients Undergoing Elective Surgery at St. Paul's Hospital Millennium Medical College," provides insights into the current practices and challenges associated with preoperative fasting.

The study revealed that the majority of patients received preoperative fasting instructions from anesthesiology residents, while only a small proportion received information from nurses. This finding is on contrary to a study done in Addis Ababa Ethiopia on five selected public hospitals (19) and Kenya (8). These differences might be due to the study area is one of institution where anesthesiology residents train their specialty program and preoperative evaluation of patients before surgery is one of their daily. This finding highlights the need for consistent and coordinated communication among healthcare professionals involved in preoperative care. A study conducted in Ethiopia, Adis Ababa by Fekede et al. (19) emphasized the importance of multidisciplinary collaboration and standardized protocols in ensuring consistent preoperative patient education and instructions. Involving nurses and other healthcare providers in the dissemination of fasting information could potentially improve adherence rates.

The study findings revealed a concerning lack of knowledge among patients regarding the importance of preoperative fasting and the recommended fasting times. Only 10.9% of patients understood the significance of fasting before surgery, and the majority (67.8%) were unaware of the appropriate fasting duration. This lack of knowledge is a significant barrier to adherence, as highlighted by various studies from other African countries, study done in Botswana referral hospital the majority of patients didn't understand about the importance of preoperative fasting and the same is true in study done in Kenya referral hospital only 6.2% gave the correct reason for preoperative fasting (16,17,19). These findings highlight the need for improved patient education and the dissemination of clear, concise information regarding preoperative fasting guidelines. Effective patient education can play a crucial role in improving adherence to preoperative fasting guidelines.

One of the key findings of this study is the duration of preoperative fasting among the respondents. The results reveal that the majority of patients fasted considerably longer than the recommended fasting times, with mean fasting times of 9.76 ± 3.21 hours for clear fluids, 10.84 ± 2.92 hours for semi-solids, and 11.92 ± 2.89 hours for solids. This prolonged fasting duration aligns with the findings of several other studies. This prolonged fasting duration is consistent with findings from other studies in Ethiopia, Tikur Anbesa specialized hospital. The mean (standard deviation) fasting hours from breast milk, solid foods, and clear fluids were 7.75 (2.89), 13.25 (3.14), and 12.31 (3.22), respectively and neighboring countries Kenyan referral hospital most of respondents (73.8%) fasted >15 hours. (8–10). Addressing operational challenges, such as optimizing surgical scheduling and minimizing case delays, could help reduce inadvertent prolongation of fasting times.

The study identified two significant factors associated with poor adherence to preoperative fasting guidelines: the order of the patient's schedule for surgery and the lack of previous surgery history. Patients scheduled second or later in the day were 5.2 times more likely to have poor adherence to preoperative fasting guidelines compared to those scheduled first. These findings are consistent with research done in Adis Ababa on selected public hospitals and study conducted in Kenya (8,19), which reported that patients scheduled later in the day and those with no prior surgical experience had lower adherence rates. This finding highlights the importance of patient education and familiarity with preoperative procedures. Patients with previous surgical experiences may better understand the rationale behind fasting guidelines and be more compliant with instructions.

Other studies have also identified factors that contribute to poor adherence to preoperative fasting guidelines, such as inadequate patient education, lack of standardized protocols, and communication breakdowns between healthcare providers which were not identified in this study (20,21).

CHAPTER SEVEN: LIMITATIONS OF THE STUDY

The study is not without limitations. The study was conducted at a single healthcare facility, St. Paul's Hospital Millennium Medical College. While the findings provide valuable insights, the generalizability of the results to other healthcare settings or populations may be limited due to potential variations in practices, protocols, and patient demographics. The study also relied on self-reported information from participants regarding their knowledge and understanding of preoperative fasting instructions. This could introduce recall bias, as participants may not accurately remember or report the instructions they received or their level of understanding.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1. Conclusion

The overall preoperative fasting guideline adherence of patients admitted in SPHMMC for elective surgery was 6.5% which is very low and alarming as compared to other studies conducted before. Factors significantly associated with poor adherence to fasting guidelines were being scheduled second or later for surgery and having no previous history of surgery.

8.2. Recommendation

Based on the findings of this study the following recommendations forwarded:

For the Hospital

- Implement clear, evidence-based protocols and guidelines for preoperative fasting to promote consistency in practice and improve adherence.
- Fostering collaboration among healthcare professionals, including surgeons, anesthesiologists, nurses, and dietitians, to facilitate effective communication and ensure that preoperative fasting instructions are consistently provided to patients.
- Enhancing patient education efforts by providing comprehensive information about the rationale, importance, and specific instructions for preoperative fasting.
- Conducting regular audits and quality improvement initiatives to help identify areas for improvement, monitor adherence to fasting guidelines, and implement targeted interventions to address identified gaps.

For researchers

- Further research to understand the factors influencing adherence to preoperative fasting guidelines, as well as the potential impact of prolonged fasting on patient outcomes, which can help to evidence-based practice and drive continuous improvement.

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ANNEXES

Annex I: Information sheet and informed consent

Title: 'Preoperative Fasting time and factors affecting adherence to preoperative fasting time among adult patient undergoing elective surgery' Introduction Good Morning/Good Afternoon
My name is, from Saint Paul's Hospital Millennium Medical College Department of Anesthesiology, Critical Care and Pain medicine and I am doing my research on 'Adherence to preoperative fasting time among adult patient undergoing elective surgery at SPHMMC'. I am interviewing adult patient coming for elective surgery so that you are also included in this study. To attain its objective, your honest and genuine participation by responding to the question prepared is very important & highly appreciated. We ask that you read this form and ask any questions that you may have before agreeing to participate in the study

If you have any other concerns about your rights as a research participant that has not been answered by the data collector, you may contact the principal investigator by telephone at

Consent

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I also understand that there is no risk in participating in the study, so I voluntarily agree to take part in this study.

Annex II: English version questionnaire

Questionnaires

Date-----Time-----

Variable	Response	Remark
Part 1: Identification		
1. Card number		
Part 2: Questions on Socio- demographic characteristics of patients		
2. Age (in year)		
3. Sex; M ----- F-----		
4. Level of education	A. No education B. Primary C. Secondary D. More than Secondary	
5 ASA PS status;	A. I B. II C. III D. IV	
Part 3: Questions on preoperative fasting time		
6. Did you fast before your surgery today?	A. Yes B. NO	
7. Who informed you the need to fast?	A. Nurses B. Anesthesiology Resident C. Surgery Resident D. Anesthetists E. Others -----	
8. What was the instruction given to fast?	A. Don't take any food or liquid after mid night. B. You should fast for solid food minimum 8 hrs before surgery. C. You should fast for Semisolid food minimum 6 hrs before surgery D. You should fast for liquid Minimum of 2hrs before surgery E. None-----	
9. For how long did you fast for solid? (in hrs)	_____	
10. For how long did you fast for Semisolid? (in hrs)	_____	
11. For how long did you fast for Clear Fluids? (in hrs)	_____	
12. Did you receive any information about why it is important to avoid food and fluids before your Surgery?	A. Yes B. No	
13. How long do you think to fast before surgery?	A. 2 hrs B. 4hrs	

	C. 6 hrs D 8hrs E >8hrs F I don't know	
14. Do you have previous history of surgery?	A. Yes B. No	
15. Order of the patient's schedule		
16. If fasting time is prolonged what is the reason?	A. Prior surgery takes long time. B. Changing order of patients. C. Waiting for laboratory results D. Incorrect order was given E. Patient Preference F Others (specify).....	
Part 4: Type of surgery and anesthesia		
17. Type of anesthesia. Given	A. General anesthesia B. Spinal C. Sedation D. Nerve block E. Local infiltration F. Other (specify) ____	

Thank you