HARAMAYA UNIVERSITY

COLLEGE OF HEALTH AND MEDICAL SCIENCES

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PREOPERATIVE FASTING TIME AND ASSOCIATED FACTORS AMONG ADULTS UNDERGOING ELECTIVE SURGICAL PROCEDURE AT HIWOT FANA COMPERHENSIVE AND SPECIALIZED UNIVERSITY HOSPITAL, HARAR, EASTERN ETHIOPIA

POST GRADUATE ANESTHESIOLOGY CRITICAL CARE AND PAIN MEDICINE RESEARCH THESIS

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Haramya University, Harar

Preoperative Fasting Time and Associated Factors Among Adults Undergoing Elective Surgical Procedure at Hiwot Fana Comprehensive and Specialized University Hospital, Harar, Eastern Ethiopia

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I hereby certify that I have read and evaluated this thesis entitled **"Preoperative Fasting Time and Associated Factors Among Adults Undergoing Elective Surgical Procedure at Hiwot Fana Comprehensive and Specialized University Hospital, Harar, Eastern Ethiopia":** prepared under my guidance by Frehiwot Amde (MD). I recommend that it can be submitted as fulfilling the thesis requirement.

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As a member of the board of examiners of the post-graduate Open thesis defense examination, I certify that I have read and evaluated the thesis prepared by Frehiwot Amde (MD) and examined the candidate. I recommend that the thesis should be accepted as fulfilling the thesis requirement for the Degree of Post Graduate Anesthesiology Critical Care and Pain Medicine.

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BIOGRAPHICAL SKETCH

My name is Frehiwot Amde was born on April 04, 1993 in Dilla town. Completed Primary and secondary school at Dilla Don Bosco and Hawassa St Daniel Comboni school. Pursued my Bachelor of Medicine at Mekelle University, Ayder campus. I have gained professional experience as General Practitioner at Karat Primary Hospital, Konso, COVID center, Dilla and Non-Governmental Organization (Family Guidance Association Ethiopia), Hawassa. Currently I am Studying Anesthesiology, Critical Care and Pain Medicine at Haramaya University Since 2022.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

ACCPM	Anesthesiology Critical Care and Pain Medicine
ASA	American Society of Anesthesiologist
BMI	Body Mass Index
HFCSUH	Hiwot Fana Comprehensive and Specialized University Hospital
Hr.	Hour
KNH	Kenyatta National Hospital
NPO	Nil Per Os
POF	Pre Operative Fasting
PONV	Post Operative Nausea and Vomiting
Pt	Patient

ABSTRACT

Introduction: Pre-Operative Fasting (POF) is mandatory before anesthesia to reduce the risk of aspiration. However, the ordered 6-8 hours of fasting time for solids and 2hrs for clear liquids may be prolonged for various reasons. Prolonged preoperative fasting may result in detrimental effects such as hypovolemia, dehydration, headache, mouth dryness, hunger, and thirst. These effects impact patient wellbeing and satisfaction with healthcare. Information is scarce about fasting guidelines and their implementation in our country.

Objective: To assess preoperative fasting time and associated factors in adults under elective surgical procedure from December 12,2024 to January 24, 2025) at Hiwot Fana Comprehensive Specialized University Hospital, Harar, Eastern Ethiopia.

Method: Institution-based, cross-sectional study design was employed. A consecutive sampling technique was used to select study participants. Single population mean formula was used to get a total sample size of 271. Structured questionnaire adapted after review of different literature was used. EpiData was used for data entry and statistical Package for Social Sciences version 26 was used for data analysis. Linear regressions were done to identify factors associated with preoperative fasting time. Beta coefficient was reported and P-value less than 0.05 or CI not containing zero was taken as significant association.

Result: The mean preoperative fasting times was 12.39 ± 3.16 hours for solids and 10.46 ± 3.32 hours for fluids. Age (β = 0.57, 95% CI: 0.27, 0.73), the presence of an anesthesiology residents and surgical residents/surgeon as a source instruction (β=-1.17, 95% CI, -2.03, -0.33), (β=-1.18, 95% CI, -1.88, -0.48)respectively, having a college educational level (β=-0.78, 95% CI, -1.55, -0.07), being scheduled for the third operation of the day(β=3.82,95% CI, 0.42, 7.22), headache (β=0.75, 95% CI, 0.08, 1.42) were significantly associated with preoperative fasting time.

Conclusion: Preoperative fasting times significantly exceed recommended guidelines, adversely affecting patients' outcome. Factors such as age, education level, anesthesiology residents' involvement and sequence of surgical schedule affect preoperative fasting. This study suggests revising our clinical practice to improve patient care, outcome and satisfaction.

Key words: Preoperative fasting, Elective surgery, Anesthesia

1. INTRODUCTION

1.1 Background

According to American Society of Anesthesiologists (ASA), preoperative fasting is defined as a prescribed period of time before a procedure when patients are not allowed the oral intake of liquids or solids to decrease gastric volume which in turn lower the risk of pulmonary aspiration during anesthesia(Joshi et al., 2023).

Surgery is a trauma which occur catabolic process and changes in immune and inflammatory systems, in order to restore homeostasis and repair the damages tissues. Prolonged preoperative fasting with hyper catabolism caused by metabolic stress of the surgical trauma induces damage in the nutritional status or exacerbation of possible previous malnutrition. Besides that, this process could increase the insulin resistance, risk of infection, decrease intestinal integrity or impairment of the healing process and could prolong the hospital stay(Campos Samara Bomfim Gomes et al. 2018).

Patients fasting for shorter periods of time are at risk of having residual contents in their stomach, which may be aspirated during anesthesia(Lamacraft et al. 2017). Serious morbidity and considerable costs are associated with aspiration of gastric contents that results in an aspiration pneumonitis, acute lung injury, or acute respiratory distress syndrome(Engelhardt and Webster 1999).

The prescribed preoperative fasting guideline is a departure from traditional practice where patients were fasted from midnight to the following day's surgery regardless of the patient's condition, work load, theatre schedules, emergencies, and other logistical challenges. Despite the aforementioned advantages of the revised globally acceptable guidelines, some hospitals have maintained the time honored prolonged preoperative fasting practice notably nil per os (NPO) from midnight(Njoroge et al., 2017).

Preoperative fasting restricts patients from nutrition and hydration in addition to that when the duration of fasting prolongs may cause adverse effects such as distress, confusion, instability, hypoglycemia, headache, dehydration, electrolyte imbalance postoperative nausea and vomiting (PONV), and increased insulin resistance(Abebe et al. 2016).

1.2 Statement of problem

The main aim of preoperative fasting is to reduce gastric volume and acidity. Furthermore, it decreases the risk of pulmonary aspiration. However, in practice preoperative fasting is usually prolonged beyond the recommended time for various reasons (Eisler et al. 2018).

The instructions (health messages) for preoperative fasting are issued by clinical team members, namely, nurses, physicians, anesthetists, or surgeons. The instructions should be clear including the objective of preoperative fasting, duration, and the expectations as well as the consequences of no adherence. Therefore, the clinician should be conversant with the guidelines and communicate and deliver clear instructions to the patients(Eisler et al. 2018). Therefore, many anesthesia societies have changed their guidelines and recently recommend intake of clear fluids up until 2 hrs. and solid foods up to 6 to 8hrs before surgery and anesthesia(Smith et al. 2011).

Despite the guidelines many researches show us there is POF greater than 15hrs (Francisco et al. 2015) (Njoroge et al. 2017). The reasons for this is lack of knowledge about POF hrs. on instruction provider, patients' knowledge about POF, delaying of the surgery and sequence of the surgery. It is clear that developing a national and/or local fasting protocol, training about the advantage of it. These actions will also help to avoid or, at least, minimize the adverse effects of prolonged fasting, improve the patient's postoperative outcome, and improve the patient's experience with anesthesia and surgery (Gunawardhana A, 2012).

There is a big gap between the time the patients started NPO as ordered and the time the operation is performed and recommended times. Although preoperative fasting order is a common practice in preoperative patient preparation, the average ordering for particular procedure is usually started from mid night. The mean duration of fasting is significantly longer for patients, especially operated after midday. The other is patient receive conflicting information from anesthesia, surgical and nursing side leading to confusion and variability in fasting practices (Abebe et al. 2016).

Therefore, this study is important to assess preoperative fasting and identifying the factors associated with deviations from recommended guidelines are essential for improving perioperative care and decreasing post operative complications associated with prolonged fasting. This study focuses on to address these gaps by assessing preoperative fasting durations and analyzing the

factors influencing it, and provide valuable insights to guide evidence-based interventions and policy improvement. in elective surgical patients comparing the prescribed, performed and recommended times. Additionally, it aims to highlight the impact of inconsistent communication from different health care providers, creating insights for improving the standardization and adherence to fasting guidelines.

1.3 Significance of the study

This study was the first of its kind to be done in anesthesiology department of HFCSUH, Harari, eastern Ethiopia. This study helps to inform the hospital management about the magnitude of the problem and to highlight awareness of the problem area's and concerned bodies, which helps to generate quality improvement and establish local guidelines about perioperative times. This study will benefit HFCSUH as well as Harari regional health bureau as an input to know the gaps and on timely intervening on prolonged perioperative fasting times. The result of this study will also serve as a baseline for next researchers to be done in this area.

1.4 Objective of the study

1.4.1 General Objective

To assess preoperative fasting time and associated factors among adults undergoing elective surgical procedure at HFCSUH, Eastern Ethiopia from December 12, 2024 to January 24, 2025.

1.4.2 Specific Objectives

To estimate average preoperative fasting time

To identify factors that could influence the patients' fasting period

2. LITERATURE REVIEW

2.1 Preoperative fasting times

The 2023 ASA guidelines recommend Healthy adult patients should be encouraged to drink up to 400ml of carbohydrate-containing clear liquids until 2hrs and 8hrs for solid food before an elective procedure to minimize potential harms of prolonged fasting, including hunger and thirst(Joshi et al. 2023).

A cross –sectional study done in Brazil among 65 elective surgical patients showed that fasting was started form midnight for liquids and solids and the real fasting average time was 16 h (9.5-41.58) was higher than prescribed (11 h, 6.58 -26.75). The patients submitted to surgery in the afternoon were in more fasting time than those who did in the morning(Francisco et al., 2015).

Another prospective, cross-sectional survey done in Pakistan among 102 children, up to age of 16year scheduled for pediatric surgery. The duration of fasting was compared with the recommended one and only 4% of children could be labeled as having the optimum fasting. Based on the current guidelines, in 96% of children, the guidelines were not followed(Alvi Nouman Ikram ,2016).

A prospective study was conducted in Oman among 169 elective surgical patients were included in the study, 88 male and 81 female. The minimum and maximum fasting hours with regard to food were 7 hours and 19 hours, respectively; all the patients fasted from food for longer than the recommended time. The minimum and maximum fasting hours for fluids were 4 hours and 19 hours, respectively; all the patients fasted from fluid for longer than the recommended time (JR,Maltby et al., 1991).

Another prospective study was conducted in South Africa from 18 June to 30 September 2012 among 105 patients aged 14 - 60 years. For solids, patients were most frequently prescribed to start fasting from 22h00 to00h00 (53.3% and 39.1%, respectively).The median duration of fasting was 14 hours and 45 minutes (range 9 hours and 45 minutes - 19 hours and 5 minutes). For fluids, patients were most frequently prescribed to start fasting from 05h00 (46.7%), 00h00 (27.6%) and 22h00 (7.6%). In practice, no patient ingested fluids after 22h30 or <9 hours preoperatively.

The median fasting time for oral fluids was 13 hours and 25 minutes (range 9 hours and 37 minutes - 19 hours and 5 minutes)(Lamacraft et al., 2017).

A prospective study was conducted in Johannesburg, 2016 among 64 patients from four surgical disciplines. The median instructed fasting time was 10 hours with a minimum of 8 hours and a maximum of 12 hours. The mean actual fasting time was 14.92 hours. The difference between the actual and instructed fasting times was statistically significant. There was however no difference in fasting times between the four surgical disciplines(Melissa & Herbst, n.d.2016).

A descriptive cross-sectional study was conducted in Botswana among 260 patients. Majority of patients (98.1%) were instructed to fast from midnight. Fifteen patients (5.8%) reported that they were told the importance of preoperative fasting. The mean fasting period were 15.9±2.5 h (range 12.0-25.3 h) for solids and 15.3±2.3 h (range 12.0-22.0 h) for liquids. The mean duration of fasting was significantly longer for patients operated after midday compared to those operated before midday(Abebe et al., 2016).

Another cross-sectional survey was carried out in Sri Lanka, during the months of June and July in 2010 among 235 patients and 118 healthcare workers were included. The mean duration of fasting was 13.86 hours (range 8 – 18) for solids and 12.68 hours for liquids (4 – 18). All junior anesthetists and 64.3% of Intern medical officers (IMOs) had above satisfactory level of knowledge. Nurses had below satisfactory knowledge. Only 58.3% of anesthetists and none of the nurses or IMOs have adhered to guidelines. 81% patients stated that they would refuse a meal at 2 am but 66% would have appreciated a cup of tea 2 hours before surgery. Failure of implementation of guidelines is mainly due to inadequate knowledge and poor attitude among ward staff(Gunawardhana A, 2012).

A descriptive cross-sectional study involving 65 surgical patients at KNH conducted between April and July 2015.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 %(Njoroge et al. 2017).

An audit was conducted at the University of Gondar Hospital from March 10 to April 10, 2013 among 43 patients. 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, and12.72, respectively. More than 95 % of the patients fasted from fluid longer than recommended(Gebremedhn & Nagaratnam, 2014).

On research that is conducted in Addis Ababa public hospitals The mean preoperative fasting times were 14.26 ± 2.35 hr. for solids and 13.89 ± 2.37 h for clear fluids from 422 participants 414(98.1%) were operated after 8hr or more hours of fasting and from those 329(78%) operated after more than 12 hr. Only 8(1.9%) patients were operated after a fasting time equal to 8hr(Fekede et al., 2022).

2.2 . Factors that influence fasting period

2.2.1. Socio demographic factors

A cross sectional study that was done in public hospitals of Adiss Ababa on 422 patients revealed prolonged fasting was weakly associated with age(*rs(420) = o.o9, p < .o85*)for solid foods and *rs(420) = o.o9, p < .o82*)for liquids. Sex also doesn't affect fasting time.by this similar study type of surgery and physical status also weakly associated with preoperative fasting time. Our result also showed that level of education was a weak and negative relation with preoperative fasting time. When level of education increases patients fasting duration was decreased. Patient's level of education may help them to adhere with the fasting instruction (*p<0.001 for both solid and liquid food*) (Fekede et al., 2022).

The selected sociodemographic characteristics of the participants' variables such as sex, types of procedures, and ASA classes failed to show statistical significance. Whereas age was significantly associated with prolonged preoperative fasting. Those patients whose age increased by one year had odds of 11.8% less likely to have a prolonged preoperative fasting p (0.024) [AOR: 0.88, 95% CI (0.79, 0.98)] (Yimer et al. 2022).

levels of educational status, primary and above were, 59.5% less likely to be associated with prolonged preoperative fasting than educational levels with illiteracy and ability to read and write p (0.025) [COR, 0.40, 95%, CI (0.18, 0.89) (Yimer et al. 2022).

Another cross-sectional study that is done in Brazil 2015 on 65 patients suggested us, there was no observed differences between fasting and ASA level (0.067 and 0.805), type of procedure (p=0.613 and 0.916) and age (p=0.073 and 0.670) for solids and liquids, respectively. Regarding the practiced fasting for solids and liquids, the differences were observed by only ASA level (p=0.018). The ASA III patients had higher fasting that ASA I and II (post hoc test; 0.014 and 0.043, respectively) (Francisco et al., 2015).

A study that is conducted in Canada also revealed that There were no statistically significant differences with respect to sex distribution, age, weight, height, or smoking habit (r = 0.02) (JR,Maltby et al., 1991).

2.2.2 Surgery and Anesthesia related factors

Regarding preoperative fasting time study done in Brazil on 65 patients done on 2015 states that type of procedure weakly associated with these preoperative fasting times (p=0.613 and 0.916) and age (p=0.073 and 0.670) for solids and liquids, respectively (Francisco et al., 2015).

There was a statistically significant, strong positive correlation between total solid and liquid fasting time and sequence of patient's schedule *(rs (420) = .51, p <. oo1), (rs (420) = .57, p <. oo1)* on the study that is done in Adis Ababa (Fekede et al., 2022).

Statistical significance was observed for the sequence of patient schedules. Patients who were scheduled for 3rd and above cases were 77.7% less likely to have prolonged fasting times than cases scheduled as 1st cases p (0.025) [COR: 0.22, 95% CI (0.08, 0.61)] (Yimer et al. 2022).

Study that was done in Brazil states that when the surgical procedure happened in the afternoon the fasting time was increased (19 h; CI=9.75 to 41.58 h) compared with the morning surgeries (12.25 h; CI=50 to 27.42 h), p<0.0001. Until the previous day, 40% of patients with the procedures in the afternoon not have scheduled and they were waiting a vacancy in operating

room. Three from 65 patients had their procedures rescheduled because emergency situations (Francisco et al., 2015).

2.2.3. Knowledge of the patient about POF

On cross sectional study that is conducted in 2020 pt at Adiss Ababa hospitals from total of 279 pediatric patients, The parents who understand the purpose of fasting were 1.8 times more likely to adhere fasting guidelines compared to those who did not understand with OR:(95% CI:1.3-2.5) (Yimer et al. 2022).

On study that is conducted in Adis Ababa on 422 patients showed that 98.8% of patients lacked knowledge on the correct reason for POF ($p< o.oo1$) and how long to fast for solids and clear liquids before surgery wasn't delivered to all patients. This probably affected patients' adherence to the instruction and showed in our study by 37% of patients were received the correct fasting instruction for solid food but only 5% of them was followed the prescribed time (Fekede et al., 2022).

On study that is conducted in KPH tells us Knowledge of Respondents about POF also affect the NPO time. On the study respondents demonstrated knowledge deficit regarding the reasons for preoperative fasting. Of the respondents, only 6.2% gave the correct reason for preoperative fasting, namely, prevention of vomiting and aspiration. Nearly a half of the respondents (47.7%) did not know the reason, while others gave irrelevant answers such as reaction to anesthesia (15.4%), prevent bleeding (10.8%), and empty bowel (20%) There was a significant (χ^2 = 38.617, df = 16, p = 0.001) association between knowledge on consumption of fluid and POF(Njoroge et al., 2017).

2.2.4 Source of preoperative fasting instruction

A study done in Adiss Ababa revealed there is statistically significant association also found between preoperative fasting order instructions and adherence to guidelines. The orders given by the surgeons and interns were 70.2% less likely to be associated with preoperative fasting prolongation than orders were given by nurses with p (0.037) COD: 0.29, 95% CI [(0.09, 0.92)] (Yimer et al. 2022).

(Abebe et al. 2016)revealed majority of patients (98.1%) were ordered to fast from midnight. Fifteen patients (5.8 %) stated that they were told the significance of preoperative fasting.

2.3 Symptoms associated with preoperative fasting

A study from Brazil shows us hunger and thirst as major complication. Thirsty was the symptom more frequently during the preoperative fasting (69.23%); however, and 35.38% reported hunger in this period. The study from Kenya, at KPH the most common complication of prolonged fasting is hunger (36.9%), thirst (43.1%), anxiety (29.2%), and prolonged wait for surgery (44.6%)(Njoroge et al. 2017).

2.4. Conceptual frame work

A conceptual framework showing perioperative fasting times and associated factors was developed after reviewing of different literatures (Yimer et al., 2022), (Abebe et al. 2016) and (Fekede et al., 2022), which are related to POF. (figure 1)

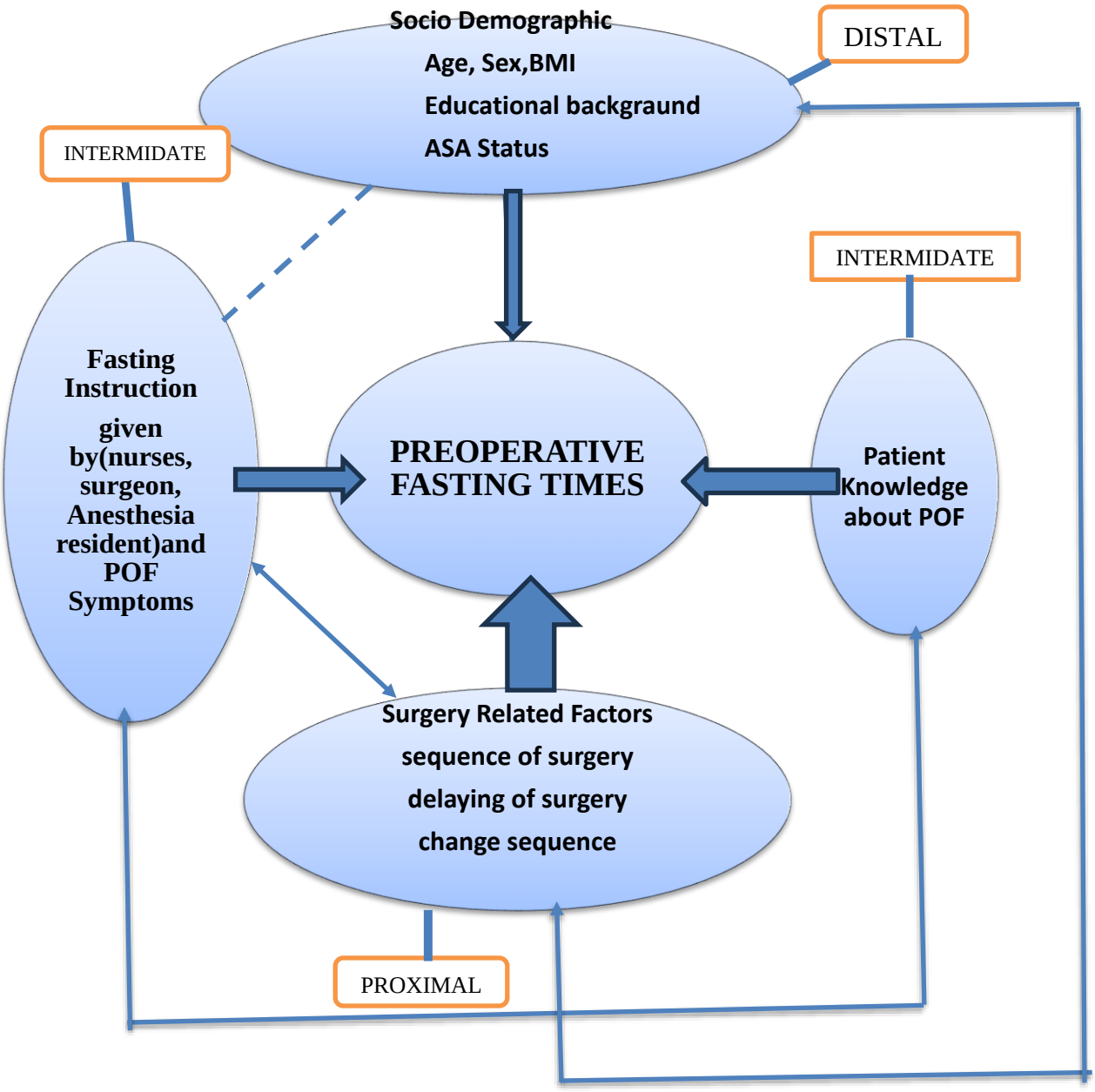

Figure 1**: Conceptual framework showing the relationship between potential factors and POF. Source: Extrapolated by the Principal Investigator**

3. METHODS AND MATERIALS

3.1 Study area and period

The study was conducted at Hiwot Fana Comprehensive Specialized Hospital, Harar town, Eastern Ethiopia from December 12, 2024 to January 24, 2025. Harar is the capital city of Harari Regional State. The region is located in Eastern Ethiopia, found 518km away from Addis Ababa. Harari is the smallest of the 12 states of Ethiopia, located in the eastern part of the country and surrounded by the east Hararghe zone of the Oromia regional state. It has 2 hospitals and 5 health centers. This study was conducted on adult patient who undergo elective surgery at HFCSUH. HFCSUH is the teaching hospital for Haramaya University. It is comprehensive and specialized hospital for Eastern Ethiopia (including Harari region, some parts of Somali region, and eastern Hararghe zone of Oromia) that is expected to serve about 5.8million people in the Eastern part of Ethiopia.

3.2 Study design

Institutional based cross-sectional study was conducted.

3.3 Population

3.3.1 Source population

All adult patients that undergo elective surgical operations at Hiwot Fana Comprehensive Specialized University Hospital during the study period.

3.3.2 Study population

Adult patients who undergo elective operation from December 12, to January 24, 2025 and fulfill the inclusion criteria was used as a study population.

3.4 Eligibility Criteria

3.4.1 Inclusion criteria

Age 18 years and above,

ASA physical status class I and class II.

3.4.2 Exclusion criteria

Diabetes mellitus patients

Patients who are in bowel preparation

Patients with conditions that can affect gastric emptying (e.g., pregnant women, gastro-esophageal reflux disease, hiatus hernia, bowel obstruction, enteral tube feeding etc.)

3.5 Sample size

3.5.1 Sample size determination

To determine sample size, hence our outcome is continuous variable, we used single population mean formula:

$n = \frac{(Z^{\alpha}/_{2} * \sigma)^2}{\varepsilon^2}$ Where Sd(σ) from previous data=2.4 (Fekede et al., 2022), z=1.96, and ε=0.3hr

n=$\frac{(1.96*2.4)^2}{0.3^2}$=245.86≈246

And when we added 10% of non-respondent rate=246*10%=24.6≈25

nf =246+25=271

The sample size for associated factors that determine the perioperative fasting time we used linear regression formula; hence our outcome is continuous variable.

N= $\frac{\left(Z^{\alpha}/_{2}+Z\beta\right)^2 \times (1-R^2)}{f^2}$

Z at significance level 0.05 is 1.96

Zβ is 0.84 at power 80%

f^2=$\frac{R^2}{1-R^2}$=the effect size of regression

R^2= 0.15(moderate effect size 15% of variance explained by predictors)

f^2=0.176

$N=\frac{(1.96+0.84)*(1-0.15)}{0.176}=38$

We adjust for associated factors (they are 5) then by rule of thumb 10 participant per associated factor for maximum estimation

N=max (10*5) =50

Add 10%non respondent rate=5

N=50+5=55

So, the sample size for this study was 271 participants, calculated based on primary objective of assessing preoperative fasting time. Although the analysis of associated factors required smaller sample size of 55, the larger sample size was adopted to ensure sufficient power for both the main objective and associated factors.

3.6 Sampling procedure and technique

A consecutive sampling method was used, where all eligible adult patients undergoing elective surgery during study period was included until required sample size 271 participants is reached.
All patients meeting the inclusion criteria was approached consecutively and information about the study was provided, and consent was obtained,
Data was collected using questionnaire administered by Anesthetists 30 minutes before surgery. The Anesthetists recorded socio-demographics, type of surgery and anesthesia, fasting times, patient knowledge about fasting, sequence of surgery and clinical symptoms /outcome of preoperative fasting. And collected at the end of the day by supervisor.

3.7 Data collection methods

3.7.1 Data collection instrument

Hence the study uses the primary data, there is a structured questionnaire containing 30 questions was employed. The questionaries format is adapted from different Literatures (Yimer et al. 2022), (Njoroge et al. 2017), (Fekede et al., 2022). The data extraction format contains 4 parts entitled with baseline socio-demographic characteristics, factors that affect POF, pt knowledge about POF and outcome of prolonged fasting.

3.7.2 Data collector and supervisor

Data was collected by Anesthetist. And supervised by ACCPM residents.

3.7.3 Data collection procedures

Data was collected over period of 6weeks by 4 anesthetists. Data regarding socio-demographic conditions, fasting period, Complication of prolonged fasting and anesthesia and surgery related factor was studied via structured questionnaire 30 minutes before surgery.

3.8 Variable of the study

3.8.1 Dependent

Preoperative fasting time

3.8.2 Independent variable

Socio demographic characteristics (Age, Sex, Weight, BMI, ASA physical status, level of education)

Types of surgery and anesthesia

Sequence of surgical schedule

Source of information about POF

Patient awareness about the reason of fasting and existing fasting guidelines

Change to the order of the operation schedule lists

3.9 Operational Definition

The following definitions are applied to this study.

• Adult: A patient age greater than18 years old.

• 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.

• Preoperative fasting time: defined as the time in hours from the last meal received by the patient to the time of the initiation of the anesthetic procedure, as recorded on the anesthetic sheet.

• Prolonged fasting: when patients fasted from both food and fluid longer than the fasting time recommended by the ASA.

• ASA physical status: is a method of categorizing patients' physical state developed by the ASA task force which classify patients according to their physical status (systemic wellbeing). It is classified into six classes.

ASA 1: Normal healthy patient

ASA 2: Patient with mild systemic disease (no functional limitations)

ASA 3: Patient with severe systemic disease (some functional limitations)

ASA4: Patient with severe systemic disease that is a constant threat to life (functionality incapacitated)

ASA 5: Moribund patient who is not expected to survive without the operation

ASA 6: Brain-dead patient whose organs are being removed for donor purpose (Fekede et al., 2022).

3.10 Data quality control

The questionnaire was pre-tested on 5% (14) of the sample size on December 2, 2024 to December 4, 2024 at Jugel General Hospital. Adequate training and supervision were provided for the data collectors and supervisor. The filled questionnaire was checked for completeness by Principal investigator and supervisor every day. The questioner was coded during data entry. Problems encountered during the study period was discussed among the study team and was solved.

3.11 Data processing and analysis

Data first was checked for completeness and then each completed questionnaire assigned a unique code. Subsequently the data was entered using Epidata version 4.7. The generated data was

exported to statistical Package for Social Sciences (SPSS) version 26 for analysis. The data was cleaned by visualizing, calculating frequencies and sorting. Univariate analyses were done using frequency and percentage for categorical variables and using mean or median and standard deviation for continuous variables. Bivariate analyses between dependent and independent variables were performed using simple linear regression.

Linear regression assumptions such as independency, linearity, homoscedasticity, normality, and multicollinearity were considered. Next, multivariable linear regression analysis was done using the forward selection method, and model fitness assumptions(R2=73%) were checked. Finally, variables whose p-value was less than 0.05 at a 95% confidence interval with an adjusted β coefficient of the predictor variables were declared the relationship of the dependent variable with independent variables in the model.

3.12 Ethical considerations

Ethical clearance was obtained from Institutional Health Research Ethics Review Committee of the College of Health and Medical Sciences, Haramaya University. The ethical clearance approval letters were submitted to Hiwot Fana Comprehensive Specialized University Hospital administrator. Data collection was collected after informed, voluntary, written, and signed consent is obtained from hospital administrators and the study participant. To ensure participants' confidentiality, names or personal identifiers was not be included in the written questionnaires and all the data to be collected during the study was kept confidential.

3.13 Dissemination of Results

The research will be presented and submitted to Haramaya University, Hiwot Fana Specialized Hospital. And disseminated to regional and federal health bureau, Ethiopian Anesthesiology, Critical Care and Pain Medicine Association and other responsible bodies. The result will be presented at college of medical and health science in different seminars, meeting, conferences and workshops. Moreover, efforts will be done to publish the findings of the study.

4. RESULTS

4.1 Sociodemographic Characteristics of Respondents

Of the 271 individuals, 150 (55.35%) were males. The mean age of the participants was 55.05 years (SD ± 11.4). Regarding residency, 121 individuals (45.65%) were from rural areas. In terms of BMI, 22 individuals (8.12%) had a BMI of less than 18.5, 187 individuals (69.00%) had a BMI between 18.5-24.9, and 55 individuals (20.30%) had a BMI between 25-29.9 (Table 1).

Table 1 Socio-demographic characteristics of adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia 2025

Variable	Category	Number	Percentage
Sex	Male	150	55.35
	Female	121	44.65
Age	18-39	25	9.22
	40-64	110	40.60
	65 and above	136	50.18
Resident	Rural	121	45.65
	Urban	150	55.35
BMI	<18.5	22	8.12
	18.5-24.9	187	69.00
	25-29.9	55	20.30
	>30	7	2.58
Level of Education	Illiterate	81	29.89
	Primary	62	22.88
	Secondary	71	26.20
	Collage and above	57	21.03

4.2 Surgery and Anesthesia related characteristics of study participants

Most participants, 179 individuals (66.05%), were classified as ASA I. General surgery was the most common type, performed on 113 individuals, accounting for 41.70% of the surgeries. General

anesthesia was the most frequently administered type, given to 150(55.35%) individuals. Instructions during procedures were most commonly provided by anesthesiology residents with 112 (41.33%) of the cases. Among the 271 individuals studied, 204 individuals (75.28%) had the estimated time of surgery provided. The majority, 155 individuals (57.20%), were scheduled for the first operation of the day. Notably, 259 individuals (95.57%) did not experience a change in the order of the schedule, and 250 individuals (92.25%) did not have an emergency procedure in between (Table 2).

Table 2 Surgery related characteristics of adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia 2025

Variable	**Category**	**Number**	**Percentage**
ASA	ASA I	179	66.05
	ASA II	92	33.95
Type of surgery	General Surgery	113	41.70
	Orthopedics	79	29.15
	Plastic Surgery	17	6.27
	Neuro Surgery	11	4.06
	ENT	10	3.69
	Gynecology	35	12.92
	Maxillofacial	6	2.21
Anesthesia type	General	150	55.35
	Regional	114	42.07
	procedural sedation	7	2.58
Source of preoperative instruction	Anesthesiology resident	116	42.80

	Surgery resident	57	21.03
	Nurse	98	36.16
Estimated time of surgery was given	Yes	204	75.28
	No	67	24.72
Operation schedule	First	155	57.20
	Second	80	29.52
	Third	34	12.55
	Fourth	2	0.74
Change to order of the schedule	Yes	12	4.43
	No	259	95.57
Emergency procedure in between	Yes	21	7.75
	No	250	92.25

4.3 Symptoms associated with Preoperative fasting times

Our research analyzed several patient-reported symptoms and conditions to identify the most prevalent issues. The results indicated that thirst is the highest-reported concern, with 67.53% of patients experiencing it. This is followed by mouth dryness, where 43.54% reported this symptom. Tiredness was noted by 41.70% of patients. Prolonged wait times for surgery affected 37.64% of the patients, while headaches were reported by 29.52%. Hunger, surprisingly, was the least reported issue at 29.89% (figure 2).

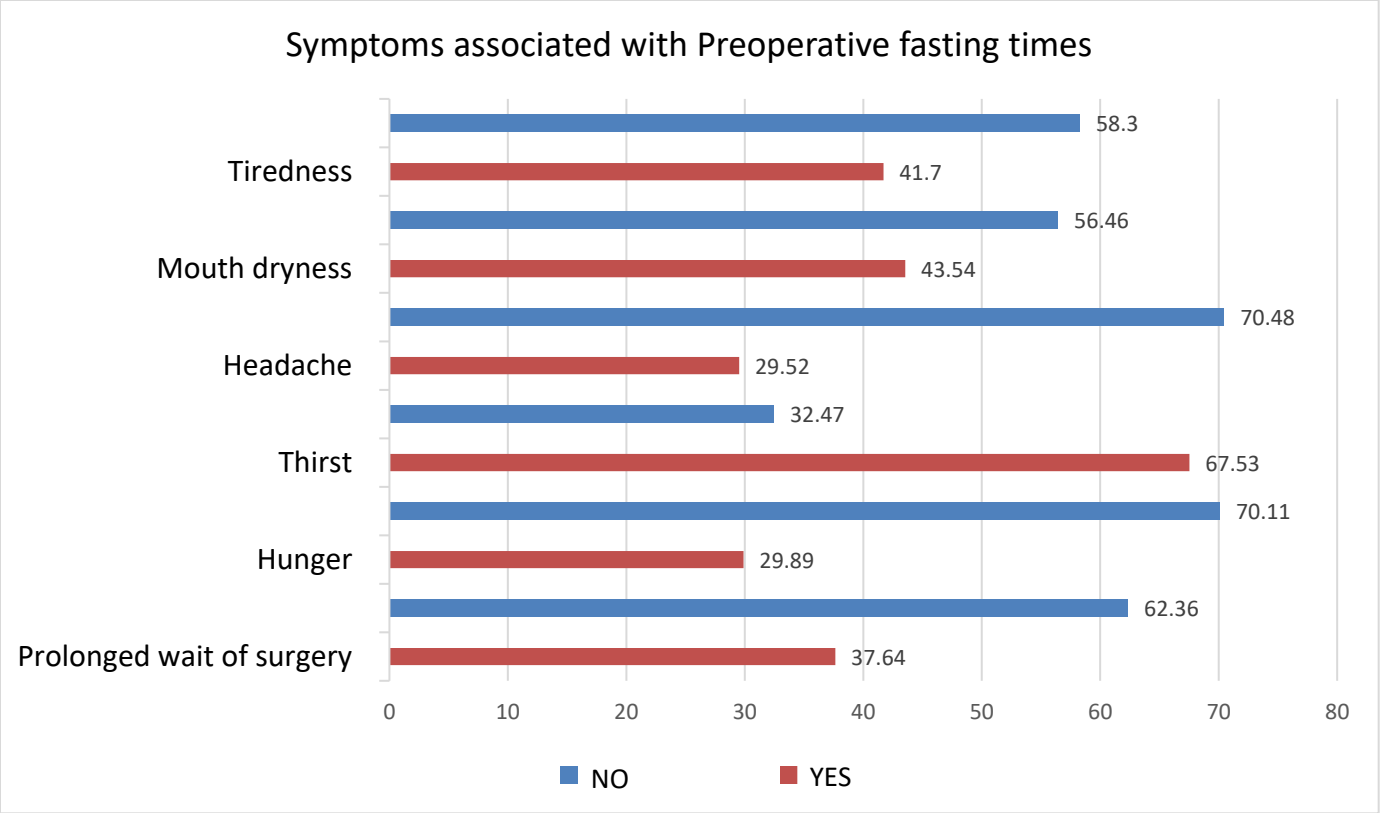

Figure 2 Symptoms associated with Preoperative fasting times of adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia 2025

4.4 Preoperative fasting time

Preoperative fasting time was calculated in hours from the last meal received by the patient to the induction of anesthesia. The mean preoperative fasting times were 12.39 ± 3.16 hr for solids and 10.46 ± 3.32 hr for clear fluids. The maximum time of fasting for solid food is 20 hr and the minimum is 6hr. The maximum time of fasting for liquid food is 20 hr and the minimum is 2hr.

4.5 Factors associated with preoperative fasting time for solid food

Age, orthopedics surgery, anesthesiology residents and surgical residents/surgeon as a source of preoperative instruction, educational level of college and above, third operation schedule of the day, having a headache, having mouth dryness, and having tiredness were associated with preoperative fasting time for solid food on simple linear regression and exported for multiple linear regression.

For every increase of 1 year in age, patients experience 0.5 times (β=0.57, 95% CI, 0.27, 0.73) longer preoperative fasting times. Patients advised by anesthesiology residents (β=-1.17, 95% CI, -2.03, -0.33) and surgical residents (β= -1.18,95% CI, -1.88, -0.48) less likely to have longer preoperative fasting times. Patients with a college education are 0.8 times (β=-0.78, 95% CI, -1.55, -0.07) less likely to have longer preoperative fasting times. Patients scheduled for the third surgery have significantly 3.82 times (β=3.82,95% CI, 0.42, 7.22) longer preoperative fasting times. Patients experiencing headaches are 1.05 times (β=0.75, 95% CI, 0.08, 1.42) more likely to have longer fasting times (Table 3).

Table 3 Factors associated with preoperative fasting time for solid among of adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia 2025

Variable	**Crude β Coefficients**	**Adjusted β Coefficients**	**P-value**
Age	0.93(0.67, 1.19)	0.505(0.27, 0.73)	0.000*
Type of surgery			
General Surgery	**1**	**1**	
Orthopedics surgery	1.35(0.46, 2.25)	0.49(-0.22, 1.21)	0.180
Plastic Surgery	2.31(0.73, 3.89)	1.30(0.038, 0.07)	
Neuro Surgery	-0.81(-2.73, 1.11)	0.69(-0.81,2.19)	0.366
ENT	0.97(-1.03, 2.97)	1.67(0.13,3.22)	
Gynecology	1.57(0.39, 2.74)	0.89(-0.27, 1.82)	0.057
Maxillofacial	0.70(-1.84, 3.25)	1.20(-0.75, 3.17)	0.227
Source of preoperative instruction			
Anesthesiology resident	-2.48(-3.27, -1.68)	-1.17(-2.03, -0.33)	0.008*
Surgeon/surgical resident	-2.26(-3.23, -1.29)	-1.18(-1.88, -0.48)	0.001*
Nurse	1	1	
Educational level			
Illiterate	1	1	
Primary	0.47(-0.60, 1.54)	0.24(-0.59, 1.09)	0.564
Secondary	-0.13(-1.21, 0.93)	0.17(-0.72, 1.06)	0.702

Collage educational level	-1.21(-2.20, -0.21)	-0.78(-1.55, -0.07)	0.017*
Operation schedule			
First	0.50(-3.13, 4.15)	0.29(-3.26, 3.32)	0.986
Second	1.86(-0.66, 6.66)	1.94(-1.34, 5.29)	0.243
Third	5.70(1.97, 9.43)	3.82(0.42, 7.22)	0.028*
Fourth	1	1	
Headache			
Yes	1.89(1-09, 2.69)	0.75(0.08, 1.42)	0.027*
No	1	1	
Mouth dryness			
Yes	1.97(1.25, 2,70)	0.33(-0.28, 0.96)	0.289
No	1		
Tiredness			
Yes	0.89(0.13, 1.65)	0.037(-0.68, 0.606)	0.908
No	1	1	

4.6 Factors associated with preoperative fasting time for liquid

Patients advised by anesthesiology residents and surgical residents are less likely to have longer fasting times (95% CI, -5.88, -4.74) and (95% CI, -3.15, -1.83) respectively with (P-value = 0.000) for both. Patients experiencing headaches are 0.65 times (95% CI, 0.04 to 1.77) more likely to have longer fasting times (P-value = 0.040). Patients experiencing mouth dryness are 0.94 times (95% CI, 0.34 to 1.96) more likely to have longer fasting times (P-value = 0.005). Patients with a college education are 0.80 times (95% CI, -0.02, -1.06) less likely to have longer fasting times (P-value = 0.044). Patients scheduled for their third surgery are 1.72 times (95% CI, 0.90, 2.54) more likely to have longer fasting times (P-value = 0.022) (Table 4).

Table 4 Factors associated with preoperative fasting time for solid among of adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia 2025

Variable	Crude β Coefficients	Adjusted β Coefficients 95% CI	P-value
Age	0.46(0.18, 0.74)	0.19(-0.001, 0.39)	0.051
Type of surgery			
General Surgery	1	1	
Orthopedics surgery	-0.16(-1.09, 0.75)	-0.32(-0.91, 0.26)	0.277
Plastic Surgery	0.86(-0.77, 2.50)	-0.26(-1.28, 0.74)	0.604
Neuro Surgery	-2.10(-4.09, -0.11)	-0.12(-1.35, 1.09)	0.836
ENT	0.005(-2.08, 2.08)	-0.77(-2.04, 0.48)	0.228
Maxillofacial	1.97(-0.66, 4.61)	0.79(-0.81, 2.40)	0.145
Gynecological	0.91(-0.29, 2.13)	0.56(-0.19, 1.32)	0.330
Source of preoperative instruction			
Anesthesiology resident	-5.68(-6.22, -5.13)	-5.31(-5.88, -4.74)	0.000
Surgeon	-2.49(-3.15, -1.83)	-2.36(-3.05, -1.67)	0.000
Nurse	1	1	0.004
Thirst			
Yes	0.89(0.13, 1.65)	0.88(0.30, 1.46)	0.003
No	1	1	
Headache			
Yes	1.89(1-09, 2.69)	0.65(0.04, 1.77)	0.040
No	1	1	
Mouth dryness			
Yes	1.47(0.71, 2.23)	0.94(0.34, 1.96)	0.035
No	1	1	
Educational level			
Illiterate	1	1	
Primary	0.63(-0.48, 1.47)	0.26(-0.41, 0.95)	0.442

Secondary	1.02(-0.09, 2.13)	0.15(-0.55, 0.86)	0.663
Collage educational level	-1.13(-0.89, -1.16)	-0.80(-0.02, -1.06)	0.044
Operation schedule			
First	1	1	
Second	0.58(0.02, 1.68)	0.50(-0.04, 1.06)	0.074
Third	0.50(2.17, 4.46)	1.72(0.90, 2.54)	0.000
Fourth	1.90(-2.38, 6.19)	2.91(0.21, 5.62)	0.035

5. DISCUSSION

This study was conducted to assess preoperative fasting time and associated factors among adults undergoing elective surgical procedures at HFCSUH, Eastern Ethiopia.

This study found that mean preoperative fasting times were 12.39 ± 3.16 hr for solids and 10.46 ± 3.32 hr for clear fluids. Our finding is comparable with a study conducted in Turkey which showed a mean fasting time of 13.34 ± 3.07 hr for solids and 12.44 ± 2.82 h for fluids (Gul et al., 2018) and lower than a study report from Botswana the mean fasting period was 15.9±2.5 hr (range 12.0-25.3 hr) 15.3±2.3 hr for solids and liquid respectively (Abebe et al., 2016). This discrepancy may indicate variations in local medical practices, patient management strategies, smaller sample size, the inclusion of different age group or adherence to fasting guidelines.

For every increase of 1 year in age, patients experience 0.5 times longer preoperative fasting times. This finding is congruent with a study conducted in the Netherlands(de Klerk et al. 2023). Older patients might be scheduled for surgeries later in the day due to various factors, including the complexity of their cases or the availability of surgical teams(de Klerk et al. 2023).

Our study also showed that there was a strong positive correlation between the sequence of the patient's schedule and preoperative fasting time. This finding aligns with other studies conducted in Ethiopia and Sri Lanka, which found that changes in surgical schedules contributed to longer preoperative fasting periods (Gunawardhana, 2012, Fekede et al., 2022). This suggests that as the sequence of a patient's schedule changes, the duration of preoperative fasting also changes significantly.

This study found a positive correlation between preoperative fasting duration with thirst and mouth dryness. Similarly, a study conducted in Addis Ababa Ethiopia, and Turkey reported (Fekede et al., 2022, Gul et al. 2018). This can be explained by the physiological effects of fasting, prolonged fasting time deprives the body of essential calories and nutrients, which triggers hormonal responses that amplify the sensation of thirst and hunger. Additionally, extended fasting is associated with increased mouth dryness due to reduced fluid intake, leading to dehydration and a subsequent decrease in saliva production (Wang and Wu, 2022).

This study also showed that level of education had a weak and negative relation with preoperative fasting time. Another study found that caregivers with higher education levels (primary and above) were less likely to be associated with prolonged preoperative fasting compared to those with lower education levels (Yimer et al., 2022). When the level of education increases, patients' fasting duration decreases because they adhere better to fasting instructions. Individuals with higher education are more likely to access information about optimal fasting times, seek guidance from medical professionals, and understand the importance of following preoperative instructions accurately. This higher education level is also linked to improved health literacy and more effective communication with healthcare providers (Wynia and Osborn ,2010).

6. STRENGTH AND LIMITATION

- **Strengths**
    - ✓ It provides a comprehensive analysis of preoperative fasting times and their correlations with various factors

- **Limitations**
    - ✓ Single center study
    - ✓ Relays on patients report
    - ✓ A consecutive sampling method which introduces bias by itself
    - ✓ Short study period

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The mean preoperative fasting times for solids and clear fluids were found to be longer than recommended guidelines, indicating a need for improved adherence to fasting protocols. The study also identified correlations between fasting times and factors such as the sequence of the patient's schedule, level of education, and age. Comparisons with other studies revealed variability in fasting practices across different regions.

7.2 Recommendations

- **To regional health bureau**
    - ✓ Design regional guidelines for preoperative fasting that align with standard guidelines.
    - ✓ Monitoring for compliance with fasting guidelines in healthcare facilities.
- **To hospital**
    - ✓ Arrange regular training about Preoperative fasting for health professionals
    - ✓ Creating access to improve communication among different departments
    - ✓ Develop Institutional based fasting policies
    - ✓ Regularly audit and review fasting practices and address gaps
- **To feature researchers**
    - ✓ Conduct multicenter study
    - ✓ Conduct on studies on other group of participants

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9. ANNEXES

9.1. Information Sheet and Informed Voluntary Consent form for the Head of Hospital

My name is Frehiwot Amde (MD, ACCPM resident). I am the principal investigator for a study at Hiwot Fana Comprehensive Specialized Hospital examining perioperative fasting period and associated factors in adult elective surgical patients. I would be grateful for the opportunity to discuss this research with you in more detail. Thank you for your time and consideration.

1. **The study title:** Perioperative fasting time and associated factors among adults undergoing elective surgery at HFCSUH, Harar, Ethiopia.
2. **Purpose of the study:** The findings of this study can be a paramount importance for the hospital to plan intervention programs to improve Knowledge and practice about preoperative fasting times and help to provide institutional based guidelines. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of specialization degree in anesthesiology, critical care and pain medicine for the principal investigator.
3. **Procedure and duration:** We will collect the data by questionnaire that contains a total of 30 questions. It will take approximately 30 minutes from the respondents' time to complete the questionnaire.
4. **Risks and benefits:** The risk of being participated in this study is very minimal, but only taking few minutes from Participant time. There will not be any direct payment for participating in this study. But the findings from this research may reveal important information for the health and health care providers.
5. **Confidentiality:** The information participants will provide us was kept confidential. There was no information that will identify the participants in particular. The findings of the study were general for the study community and will not reflect anything particular of individual persons. The questionnaire was coded to exclude showing names.
6. **Rights:** Participants for this study is fully voluntary. They have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits

which they otherwise are entitled. They do not have to answer any question that you do not want to answer. The hospital has also the right to stop this study from being conducted at any time if any misdeeds and unethical procedures are observed during the data collection process.

7. **Contact address:** If there is any questions or esquires any time about the study or procedures, please contact in this address.

   Principal investigator: Frehiwot Amde (MD, ACCPM Resident)

   Email. frehiwotamde2011@gmail.com

   Mobile phone: +251926262870

   Institutional Health Research Ethics Review Committee; Office phone: +251-254-66-2011

   O. Box 235, Harar, Ethiopia

8. **Declaration of informed voluntary consent**

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that Participants have the right to withdraw from the study at any time or not to answer any question that they do not want. I am also informed that the Hospital has the right to stop this study from being conducted if any misdeeds and unethical procedures are observed during the data collection process in the Hospital's premises. Therefore, I declare my voluntary consent on behalf of HFCSH management to allow this study to be conducted in the Hospital with my initials (signature).

Name and signature of Head of Institution ……Signature……..... Date……
Name and signature of Principal investigator ……Signature……..Date……

9.2 Participant's information sheet and informed voluntary consent form

My name is _____, I am working as a data collector for the study being conducted in Hiwot Fana Comprehensive Specialized University Hospital by Dr. Frehiwot Amde, who is studying for her specialization in anesthesiology, critical care and pain medicine at Haramaya University, HFCSUH. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

1. **The study /project title:** Assessment of perioperative fasting time and associated factors in adult undergoing elective surgery at HFCSUH, Harar, Ethiopia.
2. **Purpose of the study:** The findings of this study can be a paramount importance for the hospital to plan intervention programs to improve Knowledge and practice about preoperative fasting times and help to provide institutional based guidelines. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of specialization degree in anesthesiology, critical care and pain medicine for the principal investigator.
3. **Procedure and duration:** We will collect the data by questionnaire that contains a total of 30 questions. It will take approximately 25 minutes from the respondents' time to complete the questionnaire.
4. **Risks and benefits:** The risk of being participated in this study is very minimal, but only taking few minutes from your time. There will not be any direct payment for participating in this study. But the findings from this research may reveal important information for the hospital and providers.
5. **Confidentiality:** The information you will provide us was kept confidential. There was no information that will identify you in particular. The findings of the study was general for the study community and will not reflect anything particular of individual persons. The questionnaire was coded to exclude showing names.
6. **Rights:** Participants for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits

which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

7. **Contact address:** If there is any questions or esquires any time about the study or procedures, please contact in this address.

   Principal investigator: Frehiwot Amde (MD, ACCPM Resident)

   Email. frehiwotamde2011@gmail.com

   Mobile phone: +251926262870

Institutional Health Research Ethics Review Committee; Office phone: +251-254-66-2011 /PO. Box 235, Harar, Ethiopia

8. **Declaration of informed voluntary consent** I**:** have read/was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declared my voluntary consent to participate in this study with my initials(signature).

Name and signature of data collector ……. Signature……. Date……

Name of participant……. Signature……. Date……

9.3 Participant information sheet and informed voluntary consent form (Afan Oromo version)

Meqaan ko _____ jedhamaa. Yunivarsitii Haramayaatti kolyji fayaa fi wal'ansaa, Mana barnootaa Wal'ansaa Fayyaatti Kutaa Barnootaa Ansteziiyoloogii kiritikaal keeri fi meedisiinii peeyiiniitti barattuu maastaraa waggaa xumuraa kan ta'an doctor (Dr.) Frehiwot Amde Qorannaa fi qo'annaa gaggeefamuuf sassabduu ragaa ta'e hajjachaan jiraa. Maaloo, waa'ee adeemsa qo'annaa kanatti hirmaachuu keessan ilaalchiisee ibsa barbaachiisu issinii kennuf sirriitti nahordoofaa.

1. **Mataduree qo'annichaa:-** Yeroo sooma baqaqsanii hodhuu duraa fi wantoota kanaan walqabatan ga'eessota baqaqsanii hodhuu filannoo taasifamaniif.
2. **Kaayyoo qo'nniichaa:-** Argannoon qorannoo kanaa hospitaalichi sagantaalee gidduu seensaa karoorsuun beekumsaa fi shaakala waa'ee yeroo sooma baqaqsanii hodhuu duraa fooyyessuu fi qajeelfama dhaabbata irratti hundaa'e kennuudhaaf gargaaruuf barbaachisummaa olaanaa qabaachuu danda'a. Kana malees, kaayyoon qorannoo kanaa qorataa muummichaaf digrii ispeeshaalaayizeeshinii guutuuf ulaagaa gartokkee ta'ee barruu qorannoo (thesis) barreessuudha.
3. **Adeemsa qo'annichaa fi turiinsaa:-** Odeeffanoo kana sassaabuuf walumaa galatti gaaffilee 30 of keessaa kan qabuu yoo ta'u, gaaffiilee kanneen deebisuuf tilmaamaan daqiiqaa 30 fudhata.
4. **Qo'annicha kanarratti hirmaachuun bu'aa argamuu fi midhaa isaa:-** Daqiiqaa muraasa yeroo keessan irraa fudhachuu bira darbee midhaa isiin irra geessisuu hinjiraatu. Hirmannaa keessaniif kaffaltii tokkoolleen hinjiraatuu. Garuu bu'aan qo'annaa kanaa hospitaala kanaa fi dhaabbilee fayyaa kan biroof wal'aansa fayyaarratti qaawwaa jiruu kan cuufuu (duchuu) ta'aa.
5. **Haala iccitiin itti eggamu:-** Ragaan naaf keennitan hundii iccitiin isaa kan eegamuudha. Maalumman keessan yommiyuu hin ibsamuu. Ragaaleen argaman dimshaashaan kan ibsaman ta'aa malee raga nama dhuunfaa kan itti ibsamuu mitii. Gaaffiileen koodii addaa kan keennamuuf ta'ee afaaninnis ta'e barreefamaan maqaan namaa hin ibsamuu.
6. **Mirga hirmaattotaa:-** Qo'annaa kanarratti hirmaachuun raga irraa argachuuf kan bu'ureefatee yoo ta'u isiin kun raga keennuf hirmachuu yookin dhiisuuf mirgi keessan

nikabajamaa. Hirmaachuuf yoo murteessitan boodaas yaada keessan jijjiruuf yoo barbaaddan miirgii keessan nikabajamaa.

7. **Bakka Argamiinsa (Adraashaa):-** Naannoo qo'annaa kanaratti gaaffi kamiiyyu yoo qabaattan kanneen armaan gadiitiin nubeekssiisaa.

Abaan qo'annichaa :- Dr. Frehiwot Amde

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Sanduqa postaa :- 235 Haraar.

8. **Ibsa waltahinsaa:-** Kaayyoo qo'annichaa, adeemsaa, bu'aa fi midhaa, Haala iccitii egiinsaa, Mirga hirmaattotaa fi abaa qo'annichaa fi bakka argaminsa isaa hunda dubbisee yookin naaf dubbifamee ifaan ifatti hubadheeraa. Kan naaf hingaliin hunda gaafachuuf carraan naaf keennameraa. Yeroon barbadeetti yaada kiyya jijjiruuf mirga qabaachuu koo miirkaneesseraa. Kanaafuu qo'annaa kanarratti hirmachuuf feedhii qabaachuu kootiif mallatto kiyyaan mirkannessaa.

Maqaa hirmaataa: _____Mallatto _____ GuYaa _____

Maqaa sassabaa raga:- _____ Mallatto _____ Guyyaa _____

9.4 Participants Information Sheet and Informed Voluntary consent form (Amharic Version)

ስሜ.....ይባላል፡፡ በሐረማያ ዩኒቨርሲቲ በጤናና ህክና ሳይንስ ኮሌጅ፤ በህክምና ትምህርት ቤት፤ በአንስቴዝዮሎጂ፣ ክሪቲካል ኬር እና ፔይን ሜድስን የትምህርት ክፍል የመጨረሻ አመት ሬዚደንት በሆነችው ዶ/ር ፍሬሕይወት አምዴ ለሚጠናው ጥናት በመረጃ ሰብሳቢነት እየሰራሁ እገኛለሁ፡፡ እባክዎ ስለጥናቱ እንዲሁም የእርስዎ በጥናቱ መካተትን አስመልክቶ ማብራርያ እሰጦት ዘንድ በጥሞና ይከታተሉኝ፡፡

1. **የጥናቱ ርእስ፡** በህይወት ፋና ሆስፒታል ቀድሞ ፕሮግራም ወቶላቸው ቀዶ ጥገና ሚሰራላቸዉ አዋቂ ታካሚዎች ከመግባታቸዉ በፊት ለምን ያክል ሰዓት እንደማይመገቡ እና ይህ እንዲፈጠር እድል ሊጨምሩ የሚችሉ አመላካች ምክንያቶች
2. **የጥናቱ ዓላማ፡** የጥናቱ ዋነኛ አላማ ለጥናቱ ባለቤት የመመረቂያ ፅሁፍ ማዘጋጀት ላይ ያተኮረ ሲሆን በተጨማሪም የዚህ ጥናት ውጤት ለዚህ ሆስፒታልም ሆነ ለሌሎች በጤና ዙርያ ለሚሰሩ አካላት እንደ ግብዓት የሚያገለግል ይሆናል፡፡
3. **የጥናቱ ሂደትና ቆይታ፡** በዚህ ሆስፒታል ጥናቱ በሚካሄድበት ወቅት ህሙማን በአፍ መፍቻ ቋንቋቸው ቃለ-መጠይቅ በማድረግ የሚጠና ይሆናል በቃለ መጠይቁ 30 ጥያቄዎችን የሚመልሱ ይሆናል፡፡ እስከ 30 ደቂቃዎች እንዲሰጡኝ በአክብሮት እጠይቃለሁ፡፡
4. **በጥናቱ በመሳተፎ የሚገኝ ጥቅምና ጉዳት፡** የተወሰኑ ደቂቃዎች ከጊዜዎት ላይ ከመውሰድ ባለፈ በጥናቱ በመሳተፎ የሚደርስብዎት ምንም ዓይነት ጉዳት የለም፡፡ ለተሳትፍዎ ምንም አይነት ክፍያ አይፈፀምም፡፡ ሆኖም ግን የጥናቱ ውጤት የዚህንና የሌሎች የጤና ተቋማት የመረጃ ክፍተት የሚሞላ ይሆናል፡፡
5. **የሚስጥር አጠባበቅ፡** የሚሰጡኝ መረጃ በሙሉ ሚስጥራዊነቱ የተጠበቀ ነው፡፡ የእርስዎ ማንነት በምንም መልኩ አይገለፅም፡፡ የሚገኙ መረጃዎች በጥቅሉ የሚገለፁ እንጂ የግለሰብን መረጃ የሚያንፀባርቁ አይሆኑም፡፡ መጠይቆቹ ልዩ መለያ የሚሰጣቸው ሲሆን በቃልም ሆነ በፅሁፍ የተሳታፊዎች ስም እና ማንነት አይገለፅም፡፡
6. **የተሳታፊዎች መብት፡-** በዚህ ጥናት መረጃ ማግኘት በተሳታፊው ላይ የተመሰረተ በመሆኑ እርስዎ ለመሳተፍ ወይም ላለመሳተፍ የመወሰን መብትዎ የተጠበቀ ነው፡፡ ለመሳተፍ ቢወስኑ እንኳን ሀሳብዎትን ለመቀየር ቢፈልጉ መብትዎ የሚከበር ሲሆን ምንም ዓይነት ተፅዕኖ ወይም የአገልግሎት መጓደል አይገጥምዎትም፡፡
7. **አድራሻ፡-** በጥናቱ ዙሪያ ማንኛውም ጥያቄ ካለዎት በሚከተሉት አድራሻዎች ጥያቄዎን ያድርሱን፡፡

የጥናቱ ባለቤት፡ ዶ/ር ፍሬሕይወት አምዴ

ስልክ ቁጥር 0926262870

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የሐረማያ ዩኒቨርሲቲ የምርምር ስነ-ምግባር ተቆጣጣሪ ኮሚቴ የቢሮ ስልክ ቁጥር +251-254-662-011

8. **የስምምነት መግለጫ፡-** የጥናቱ ዓላማ፣ ሂደት፣ ጥቅምና ጉዳት፣ ሚስጢር አጠባበቅ፣ የተሳታፊዎች መብት እና የጥናቱን ባለቤት አድራሻ አንብቤ ወይም ተነቦልኝ በግልፅ ተረድቻለሁ፡፡ ያልገባኝን እንድጠይቅ እድል ተሰጥቶኛል፡፡ በፈለኩት ጊዜ ለማቋረጥ ወይም ሀሳቤን የመቀየር መብት እንዳለኝ አረጋግጫለሁ፡፡ ስለዚህ በዚህ ጥናት ለመሳተፍ ፈቃደኛ መሆኔን በፊርማዬ አረጋግጣለሁ፡፡

የተሳታፊ ስም፡- _____ ፊርማ _____ ቀን _____

የመረጃ ሰብሳቢ ስም፡-_____ ፊርማ _____ ቀን _____

9.5 Data collection questionnaire

I. Socio demographic characteristics

No.	Characteristics	Response
1	Age	A…….yrs
2	Sex	A. Female B. Male
3	Weight	A…….kg
4	BMI	
5	Educational Status	A. illiterate B. primary school C. secondary school D. college E. first degree and above
6	Adress	A. Urban B. Rural

II. Factors related to Surgery and preoperative fasting

No.	Characteristics	Response
1	ASA physical status	A.ASA I B.ASA II
2	Type of surgery	A. General surgery B. Orthopedics surgery C. Plastic D. Neurosurgery F. ENT G. Gynecology H. Maxilofacial
3	Type of Anesthesia	A. General b. Regional (Spinal, Epidural) C. Procedural sedation
4	Source of fasting instructions	A. Anesthesiology resident B. Surgeon/Surgical resident C. Nurse D. Intern E. Other……..
5	Prescribed starting fasting time for solid	……Hr
6	Prescribed starting fasting time for liquid	……Hr
7	Was an estimated surgery starting time given to the patient	A. Yes B. No
8	If yes for Q.7what time	……
9	Operation schedule	A. 1st B. 2nd C.3rd D. 4th E. other:

10	Is there change to the order of operation schedule list	A. Yes B. No
11	If yes for Q 10 changed from	……to……
12	Is there emergency procedure in between	A. Yes B. No
13	If yes for Q12	A. How many pts in between…… B. How long each procedure took…..
14	Actual starting time of fasting	A. for solid…… B. for liquid……..
15	Actual starting time of surgery	…….
16	Is the pt preoperatively on maintenance fluid	A. Yes B. No
17	If yes for Q16,	How much liter…….

III. Outcome of prolonged Preoperative fasting times

No.	Characteristics	Response
1	Prolonged wait of surgery	A. Yes B. No
2	Hunger	A. Yes B. No
3	Thirst	A. Yes B. No
4	Headache	A. Yes B. No
5	Mouth dryness	A. Yes B. No
6	Tiredness	A. Yes B. No

IV. Patient knowledge about fasting.

1. Why do you think fasting is important before surgery?

…..……..

…..……..

9.6 Data Collection Questionnaire (Afaan Oromo Version)

I. Amaloota hawaas-dimoogiraafii

No.	Gaaffii	Deebii
1	Umurii	A…….
2	Saala	A. Dhiira B. Dubartii
3	Ulfaatina	A……kg
4	BMI	……
5	Haala barnootaa	A. dubbisuu fi barreessuu kan hin dandeenye B. sadarkaa tokkoffaa C. sadarkaa lammaffaa D. kolleejjii E.digrii 1ffaa fi isaa ol
6	Teessoo	A. Magaalaa B. Baadiyya

II Wantoota sooma baqaqsanii hodhuu duraa wajjin walqabatan

No.	Gaaffi	Deebii
1	Haala qaamaa ASA	A.ASA I B.ASA II
2	Gosa Baqaqsanii Hodhuu	A. Baqaqsanii Hodhuu waliigalaa B. Lafee C. Pilaastikii

		D.baqaqsaa sammuu F.gurraa, funyaan fi mormaa G.Haadholii H. baqaqsanii hodhuu fuula
3	Gosa Anesthesia	A. Waliigalaa B. Naannoo(Spinal, Epidural) C. Hojimaataan tasgabbeessuu.
4	Madda qajeelfama soomaa	A. Jiraataa Anesthesiology B. Narsii C. Ogeessa baqaqsanii hodhuu/jiraataa baqaqsanii hodhuu D. kanneen biro…….
5	Yeroo sooma jalqabaa murtaa'e jajjaboo	……..
6	Yeroo sooma jalqabuu dhangala'aadhaaf murtaa'e	……
7	Tilmaamni yeroon baqaqsanii hodhuu jalqabuu dhukkubsataaf kennamee?	A. Eeyyee B. Lakki
8	Yoo G7f eeyyee ta'e, sa'aatii meeqa	……..
9	Sagantaa hojii	A. 1ffaa B. 2ffaa C.3ffaa D. 4ffaa E. kanneen biro
10	Gara tartiiba tarreewwan sagantaa hojiitti jijjiiri?	A. eeyyee B.Lakki

11	Q10f eeyyee yoo ta'e	…….gara……..
12	Hojimaanni hatattamaa gidduu jiraa?	A. eeyyee B. lakki
13	Yoo G12f eeyyee ta'e,	A. Dhukkubsataa meeqa:…… B. Hojimaanni hatattamaa tokkoo hangam dheerata: …….
14	Sooma sa'aatii maaqarratti jalqabdee	A. jajjaboodhaaf:…….. Hr B. dhangala'aadhaaf: …..….Hr
15	Yeroo baqaqsanii hodhuu jalqabuu qabatamaa	……..Hr
16	dhangala'aa suphaa(zeroo) irraa kayamteettaa?	A. Eeyyee B. Lakki
17	Yoo G16f eeyyee ta'e, leetira meeqa?	…….

III meeqa. Bu'aa yeroo sooma baqaqsanii hodhuu duraa yeroo dheeraa

No.	Characterstics	Response
1	Baqaqsanii hodhuu yeroo dheeraa eeguu:	A. Eeyyee B. Lakki
2	Beela	A. Eeyyee B. Lakki
3	Dheebuu	A. Eeyyee B. Lakki
4	Mataa dhukkubbii	A. Eeyyee B. Lakki
5	Afaan goguu	A. Eeyyee B. Lakki
6	Daffisuu	A. Eeyyee B. Lakki

IV. Beekumsa dhukkubsataa waa’ee sooma.

1. Soomni baqaqsanii hodhuu dura maaliif barbaachisaa ta'a jettanii yaaddu?

……..

……..

9.7 Data Collection Questionnaire (Amharic Version)

I. የ ሰነ-ሕዝብ ባህሪያት

ተ.ቁ	ጥያቄ	መልስ
1	ዕድሜ	ሀ…….
2	ጾታ	ሀ.ሴት ለ. ወንድ
3	ክብደት	ሀ…….ኪግ
4	BMI	……
5	የትምህርት ደረጃ	ሀ. ያልተማረ ለ. የመጀመሪያ ደረጃ ሐ. ሁለተኛ ደረጃ መ. ኮሌጅ ሠ.1ኛ ዲግሪ እና ከዚያ በላይ
6	አድራሻ	ሀ. ከተማ ለ. ገጠር

II. ከቀዶ ጥገና በፊት ከሚደረግ ጾም ጋር የተያያዙ ምክንያቶች

ተ.ቁ	ጥያቄ	መልስ
1	ASA አካላዊ ሁኔታ:	ሀ.ASA I ለ.ASA II
2	የቀዶ ጥገና ዓይነት	ሀ. አጠቃላይ ቀዶ ጥገና ለ. የአጥንት ቀዶ ጥገና ሐ. ፕላስቲክ መ. የአእምሮ እና የነርቭ ቀዶ ጥገና ረ.ከአንገት በላይ ቀዶ ጥገና ሰ. የማህፀን ቀዶ ጥገና ሸ የጥርስ እና የፊት ገጽታቀዶ ጥገና
3	የማደንዘዣ ዓይነት	ሀ. አጠቃላይ ለ. ክልላዊ (አከርካሪ, ኤፒዱራል) ሐ. የሂደት ማስታገሻ
4	የጾም መመሪያ ምንጭ	ሀ. አኔስቲዚዮሎጂ ተማሪ ለ. ነርስ ሐ. የቀዶ ጥገና ሐኪም/የቀዶ ሕክምና ተማሪ መ. ሌላ ከተገለጸ ……
5	ከቀዶ ጥገና በፊት ለስንት ሰዓታት ጠጣር ምግብ አንዳይመገቡ ታዘዙ	…….
6	ለፈሳሽ ምግብስ	……
7	ለታካሚው ግምታዊ የቀዶ ጥገና መነሻ ጊዜ ተሰጥቷል?	ሀ. አዎ ለ. አይ
8	ለጥያቄ 7 መልሶ አዎ ከሆነ፣ ስንት ሰዓት	…….

9	ቀዶ ጥገናው ስንተኛ ነው የሚሰራው	ሀ. 1ኛ ለ. 2ኛ ሐ. 3ኛ መ. 4ኛ ሠ. ሌላ
10	የቀዶ ጥገናው ቅደም ተከተል ለውጥ ነበር	ሀ. ነበረ ለ. አልነበረም
11	ለጥያቄ ነ0 አዎ ከሆነ መልሱ፣	ከስንተኛ..... ወደ..... ስንተኛ ተቀየረ
12	በመካከላቸው ድንገተኛ ቀዶጥገና ነበር ?	ሀ. አዎ ለ. አይደለም
13	ለጥያቀ 10 አዎ ከሆነ መልሶ	ሀ. ስንት የድንገተኛ ጊዜ ቀዶ ጥገና ተሰራ ..... ለ. እያንዳንዱ ቀዶ ጥገናለምን ያህል ጊዜ ፈጀ.....
14	ሕመምተኛው ለምን ያህል ጊዜ አልተመገበም	ሀ. ለጠጣር ምግቦች፡ ..... በሰዓት ለ. ለፈሳሽ ምግቦች ..... በሰዓት
15	የቀዶ ጥገናው ትክክለኛ የመነሻ ጊዜ	..... በሰኣት
16	ከቀዶ ጥገናው በፊት በደም ሥር በሚሰጥ ፈሳሽ ላይ ነበሩ?	ሀ. አዎ ለ. አይደለም
17	ለጥያቄ 16 አዎ ከሆነ መልሶ፣ ስንት ሊትር	.....

III. ከቀዶ ጥገና በፊት ለረጅም ጊዜ ባለመመገቦ ምክንያት የሚመጣ ጉዳት

ተ.ቁ	ጥያቄ	መልስ
1	ለቀዶ ጥገና ረጅም ጊዜ መጠበቅ	ሀ.አለ ለ. የለም
2	ረሃብ	ሀ.አለ ለ. የለም
3	መጠማት	ሀ.አለ ለ. የለም
4	ራስ ምታት	ሀ.አለ ለ. የለም
5	የአፍ መድረቅ	ሀ.አለ ለ. የለም
6	ድካም	ሀ.አለ ለ. የለም

IV. የታካሚው ከቀዶ ጥገና በፊት ስለሚደረግ ጾም ምን ያህል ያውቃል

ነ . ከቀዶ ጥገና በፊት ለምን ምግብ አይበላም

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9.8 Curriculum Vitae of Principal Investigator

Personal Information

Name Frehiwot Amde

Sex Female

Date of birth 04/04/1993

Place of birth Dilla, SNNPR, Ethiopia

Marital status Single

Nationality Ethiopian

Contact address; +251926262870/ frehiwotamde2011@gmail.com

Educational background

Completed	Name of Institution	Year	Place
Elementary school	Don Bosco Primary school	1992- 1999E.C	Dilla
Secondary school	Don Bosco secondary school	2000- 2001E.C	Dilla
Preparatory school	St. Daniel Comboni school	2002- 2003E.C	Hawassa
Doctor of Medicine	ACSH(Ayder)	2004- 2011E.C	Mekelle
Specialty in ACCPM	HFCSUH	2014E.C-Now	Harar

Work Experiences

- Works as General Practitioner at Konso Karat Primary Hospital for 1 year and 9months
- Works as GP at Dilla COVID 19treatment center for 8months.

- Works at Family Guidance Association Ethiopia at Hawassa for 7months

Language skills

Languages	Listening	speaking	Reading	Writing
Amharic	Excellent	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent	Excellent

Technical Skills

- Computer skills Good in MS-Word, MS-Power point and MS-Excel

Personal Traits

- Hardworking and believe in teamwork
- Good problem solving and communication skills, work ethics
- Open to new experience and willing to learn
- Descent, highly motivated and trustworthy

References

- Dr. Aman Edao (Assistant Professor of Anesthesiology, Critical Care & Pain Medicine)
  Contact address -phone number +251967475486
- Dr. Seid Ali (Assistant Professor of Anesthesiology, Critical Care & Pain Medicine)
  Contact address – phone number +251912121647