HARAMAYA UNIVERSITY

COLLEGE OF HEALTH AND MEDICAL SCIENCES

SCHOOL OF GRADUATE STUDIES

Knowledge, Attitude, and Practice of Enhanced Recovery after Surgery Protocol and Associated Factors among Healthcare Professionals in Public Hospitals of Harar City, Eastern Ethiopia

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A THESIS SUBMITTED TO THE DEPARTMENT OF ANESTHESIOLOGY, CRITICAL CARE AND PAIN MEDICINE, SCHOOL OF GRADUATE STUDIES, HARAMAYA UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE SPECIALITY CERTIFICATE IN ANESTHESIOLOGY, CRITICAL CARE AND PAIN MEDICINE

College: Health and Medical Science

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APPROVAL SHEET
HARAMAYA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

I hereby certify that I have read and evaluated this thesis entitled "Knowledge, Attitude, Practice and Factors Associated with the Practice of Enhanced Recovery after Surgery Protocol among Health Care professionals in Public Hospitals of Harar Town, Eastern Ethiopia"**.** Prepared under my guidance by Dr. Addis Bekele. 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 Open thesis defense examination, I certify that I have read and evaluated the thesis prepared by Dr. Addis Bekele and examined the candidate. I recommend that the thesis should be accepted as fulfilling the thesis requirement for the specialty certificate in anesthesiology, critical care and pain medicine.

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By my signature below, I declare and affirm that this thesis is my work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this thesis. Any scholarly matter that is included in the thesis has been given recognized through citation.

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BIOGRAPHICAL SKETCH

My name is Dr. Addisu Bekele (MD, ACCPMR). I was born in Chelenko Eastern Hararge Ethiopia. I have completed my elementary and secondary education at Chellenko 2004 – 2008. Primary Education, Chelenko Primary School (1996 – 2003), I have joined Hawassa University, College of Medicine and Health Sciences (2009 – 2015). After graduation, I was employed and have served as General Practitioner at Harar Jugal Primary Hospital (2016 – 2022)

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ACRONYMS AND ABBREVIATIONS

ACCPM: Anesthesiology, Critical Care and Pain Medicine

AOR: Adjusted Odds Ratio

ASA: American Society of Anesthesiology

BMI: Body Mass Index

CI: Confidence Interval

COR: Crude Odds Ratio

ENT Ear Nose Troat

ERAS: Enhanced Recovery After Surgery

HFCSUH: Hiwot Fana Comprehensive Specialized University Hospital

IHREC: Institutional Health Research Ethical Review Committee

KAP: Knowledge, Attitude and Practice

LMICs: Low and Midle Income Countries

OR: Odds Ratio

ABSTRACT

Background: The Enhanced Recovery after Surgery protocol is a systematic, evidence-based method to optimizing perioperative care, improving patient outcomes, and promoting recovery. Despite its established benefits, many healthcare settings, particularly those with limited resources, struggle to fully adhere to the protocol. In addition there is lack of evidence based information on the Knowledge, attitude, practice and factors associated with the practice of the enhanced recovery after surgery protocol among health care professionals in public hospitals in Harar, Eastern Ethiopia.

OBJECTIVE: To assess knowledge, attitude, practice and factors associated with the practice of enhanced recovery after surgery protocol among health care professionals in public hospitals in Harar, Eastern Ethiopia, from September 1 to October 30, 2025.

Methods: An institution-based cross-sectional study was conducted among 270 healthcare professionals who are working in public hospitals of Harar. Data were collected using Kobo Toolbox and analyzed with Stata version 17. Bivariable and multivariable logistic regression analyses were performed, and variables with $p < 0.05$ in the multivariable model were considered independent predictors of consistent practice.

Results: Among the participants, 21% had adequate knowledge and 19% exhibited a positive attitude toward the Enhanced Recovery after Surgery (ERAS) protocol, while only 36% demonstrated consistent practice across all ERAS components. Working in referral or teaching hospitals (AOR = 1.89, 95% CI: 1.12–3.19) and having a positive attitude (AOR = 2.11, 95% CI: 1.11–4.00) were associated with higher odds of consistent practice, whereas participants with more than five years of experience had lower odds (AOR = 0.43, 95% CI: 0.24–0.79).

Conclusion: Knowledge, attitude, and consistent practice of the ERAS protocol were low. Working in referral or teaching hospitals and having a positive attitude were associated with better practice, whereas longer professional experience was linked to lower adherence, underscoring the need for targeted interventions to improve ERAS implementation.

Key words: *knowledge, attitude, practice, enhanced recovery after surgery, Harar, Ethiopia*

1. INTRODUCTION

1.1. Background

Surgery has been an essential component of medical care for over a century worldwide. As the prevalence of severe injuries, cancer, and cardiovascular disease rises, the burden of surgical intervention on public health systems will only rise (Shrime, M.G., et al. 2015). Surgery is usually the only treatment that can alleviate symptoms and reduce the risk of death from common conditions. Every year, millions of people undergo surgery, and it is estimated that surgical treatments account for 13% of all disability-adjusted life years globally (Ferrari., et al. 2021).

The heart of every surgical process is patient safety. Because of the risks and the complexity of the therapies, the patient's health needs to be continuously monitored throughout the entire surgical procedure. In order to reduce risks and ensure the best possible results during a surgical treatment, surgical safety includes procedures and guidelines from pre-operative planning to post-operative care (Hussain, A.K., et al. 2023).

Preoperative safety precautions aim to enhance the patient's condition, lower risks, and ensure that the surgical team is prepared. These fall under the categories of anesthesia planning, infection control, risk assessment, patient identification, and team communication (Rothrock, J.C., et al. 2022). Patient verification, surgical site marking, and informed consent are all important processes (Sheedy, C. and Richard, S., 2020). Risk assessment entails examining medical history, comorbidities, medications, and airway evaluation, with appropriate laboratory testing and imaging if necessary (Sameed, M., et al. 2021).

Intraoperative surgical safety emphasizes sterility, patient monitoring, protocol adherence, and efficient communication (Chellam Singh, B. and Arulappan, J., 2023). While difficult airway planning, neuromuscular blockade monitoring, and fluid management are anesthetic safety precautions, continuous ASA-standard monitoring aids in the detection of hemodynamic instability (Law, J.A., et al. 2021). Sterile procedures, good hand hygiene, and antibiotic redosing when needed are all part of strict infection control (Joseph, M.P.S., et al. 2022).

Postoperative surgical safety emphasizes patient monitoring, complication prevention, pain treatment, and efficient handover (Rose, M., 2016). Continuous monitoring of the airway, oxygenation, hemodynamics, and neurological condition during the immediate postoperative

phase aids in the early detection of problems such as hypoxia and bleeding (Plante, A., Ro, E. and Rowbottom, J.R., 2012).

To lower the risk of postoperative complications, best practice surgical care routes, guidelines, and protocols have been established. The Enhanced Recovery After Surgery (ERAS) protocol is one such protocol. It was created using evidence to support early recovery and reduce perioperative stress and related problems (Nelson, G., et al. 2023 and Ljungqvist, O., et al. 2017). The principle underlying ERAS is the combination of a number of evidence-based interventions in the perioperative and postoperative periods that can reduce surgery-related stress on the body, allowing the patient to recover faster and better (Pignot, G., et al. 2022).

Henrik Kehlet originally described ERAS in 1997 (Kehlet, H., et al. 1997). It has evolved over time into a multidisciplinary team approach that includes surgeons, anesthesiologists, critical care physicians, physiotherapists, dietitians, and nurses in perioperative patient care and the integration of evidence-based guidelines into clinical practice. The ERAS society was founded in 2010, and guidelines for varies surgical specialties have been published since then. The use of ERAS protocols has reduced overall treatment costs while maintaining outcomes (Pędziwiatr, M.,et al. 2016).

1.2.STATEMENT OF THE PROBLEM

An estimated 4.2 million deaths worldwide are attributed to surgical complications each year, making surgical safety a significant public health concern (Weiser., et al. 2016). Compared to high-income nations, surgical mortality rates are considerably greater in low and middle income countries like Ethiopia, where up to 10% of surgery patients experience potentially fatal complications (Endeshaw, A.S., 2023).

Failing to apply ERAS principles can have serious ramifications for both patients and healthcare institutions (Memtsoudis, S.G., et al. 2019). Patients not managed according to ERAS procedures frequently have lengthier hospital stays. A study found that introducing ERAS reduced hospital length of stay by about 1.9 days compared to typical care (Sauro, K.M., et al. 2024). Without the multimodal, standardized approach to pain management that ERAS provides, opioids are frequently overused. This can result in a higher incidence of opioid-related side effects and addictions (Allen, K.B., et al. 2020). Failure to follow ERAS standards can lead to more

postoperative problems. According to research, using ERAS reduces postoperative complications significantly, including infections and thromboembolic events (Grant, M.C.,2017).

Prolonged hospital stays and higher complication rates contribute to rising healthcare costs. ERAS methods have been found to minimize overall hospital expenses by shortening length of stay and lowering complication rates (Mazni, Y., et al., 2024). Failure to implement ERAS can result in higher ICU admissions and readmission rates, further burdening healthcare systems. A study discovered that adverse events and readmissions were much lower post-ERAS adoption than pre-implementation rates (Gentles, C., et al., 2016).

There is information gap on the level of knowledge, attitude, degree of practice and factors associated with the practice of ERAS protocol among the surgical and anesthesia teams involved in surgical procedures and postoperative patient care in public hospitals in Harar town, eastern Ethiopia. This study will try to establish the level of existing knowledge, attitude and practice of the ERAS protocol in the study area.

1.3.SIGNIFICANCE OF THE STUDY

The study's findings will help to determine the current level of knowledge, attitude, practice and factors associated with practice of the ERAS protocol among surgical and anesthetic teams in general and tertiary hospitals in Harar town.

The primary beneficiary of this study will be the Harari Regional Health Bureau, as the findings can guide policy and strategic planning to improve the implementation of ERAS protocols.

The managements of HFCSH and Jugal Regional Hospital will also directly benefit by using the findings to identify gaps, it will help in developing an intervention strategy to increase the level of implementation of the protocol in all surgical cases by identifying the obstacles to its implementation and enhance overall surgical outcomes.

This study will benefit the surgeons and the anesthesia providers who are practicing in the study area by alarming them about the magnitude of the problem and making them pay due attention to it so that they can improve their overall surgical outcomes.

The finding of this research can help other researchers who are interested in writing about related topics in this study area.

1.4. OBJECTIVE

1.4.1. General Objective

- To assess knowledge, attitude, practice and factors associated with the practice of ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia, September 1 to October 30, 2025.

1.4.2. Specific Objectives

- To assess the level of knowledge towards the ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia
- To assess the attitude towards the ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia
- To assess the practice status of the ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia
- To assess factors associated with the practice of the ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia

2. LITERATURE REVIEW

Numerous studies that have examined the impact of protocol adoption on surgical outcomes have found that medical professionals' levels of acceptance and adherence to the Enhanced Recovery After Surgery protocol vary significantly between institutions and countries. Understanding the knowledge, attitudes, and practices of health care professionals is necessary to identify the barriers to the application of the protocol. This section reviews the literature on knowledge, attitude, practice and factors associated with protocol utilization.

2.1. Knowledge towards the eras protocol among health care professionals

Awareness of the Enhanced Recovery After Surgery protocol is an important aspect that influences its implementation in clinical practice. The existing literature on the level of health professionals' knowledge of the protocol is examined as follows.

A study assessed the knowledge levels of nurses employed in Turkish surgical clinics regarding the Enhanced Recovery After Surgery protocol. Of the nurses, 84.25% said they were unaware of the protocol, 99.21% said they did not follow any publications on it, and 99.21% said they had not received any training on it (Ongün, P. and Ak, E.S., 2020).

A Vietnamese electronic poll indicated that the median knowledge score was 8 (7-8). Age-based variations in knowledge scores were shown to be statistically significant. When compared to other age groups, the under-25 age group's knowledge scores were 1 point lower ($p = 0.040$). Significant disparities were also seen in years of experience and work position, with outpatient clinic nurses scoring lower on knowledge tests ($p = 0.019$) (Bang, H.T., et al. 2024).

A cross-sectional study in China found that nurses had a poor grasp of "postoperative recovery" (median average score and lower quartile were 0.75 and 0.50, respectively, which was lower than the average score of knowledge), but a good grasp of "intraoperative management" (median average score and lower quartile were 1.00 and 1.00, respectively, which was higher than the average score of knowledge) (Liu, K.X., et al. 2023).

A research conducted at Kenyatta General Hospital found that although 98% of respondents knew what Enhanced Recovery After Surgery was, their knowledge score was only 57.7%, with preoperative components receiving the lowest results. The demographic groups' levels of knowledge did not differ significantly (Warui, J.K., 2022).

All Anesthesiaology Critical Care and Pain Medicine professionals (90.7%) had strong awareness of Enhanced Recovery After Surgery Protocols, whereas only 21% of nurses did, according to an institution-based cross-sectional prospective observational study carried out at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia (Ashagrie, et al. 2021).

2.2. Attitude towards the eras protocol among health care professionals

The regular and successful application of the Enhanced Recovery After Surgery protocol in clinical settings is greatly influenced by attitudes about it. Adherence can be improved by positive attitudes, such as a strong conviction in its advantages and a dedication to patient outcome, but its use may be hampered by skepticism, reluctance to change, or feelings of increased workload. The opinions of the surgical team regarding the protocol are examined in this section.

According to the descriptive study conducted among nurses working in Turkish surgical clinics, the study's assessment of nurses' attitudes regarding the Enhanced Recovery After Surgery Protocol, 77.16 percent of them said they were unsure of the value of Enhanced Recovery After Surgery protocols (Ongün, P. and Ak, E.S., 2020).

A Vietnamese computerized poll found that nurses' and anesthesia technicians' median attitude towards the Enhanced Recovery After Surgery program were 41 (36-45). When compared to other age groups, the under-25 age group's attitude ratings were 3–4 points lower ($p = 0.004$). Significant variations were also seen in work position; thoracic surgery nurses had the lowest attitude scores ($p < 0.001$) (Bang, H.T., et al. 2024).

According to a cross-sectional study conducted in China on Enhanced Recovery After Surgery, the majority of nurses had an attitude that was "agree" or "strongly agree," the overall score being ≥4.00. In the lower quartile, this was never <4.00 (4.00, 500) (Liu, K.X., et al. 2023).

The majority of the surgical team (83%) and ACCPM (85%) at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, expressed a positive view of Enhanced Recovery After Surgery in an institution-based cross-sectional prospective observational study. Conversely, only 15% of nurses thought positively of Enhanced Recovery After Surgery. The highest percentage of positive sentiments are found among participants with one to five years of work experience (Ashagrie, et al. 2021).

2.3. Practice towards the eras protocol among health care professionals

The Enhanced Recovery After Surgery protocol's practice reflects how successfully it is integrated into routine surgical operations and after care. Effective implementation requires not only knowledge and a positive attitude, but also consistent adherence to the protocol. This section looks at the extent to which protocols are used in clinical practice.

According to a study evaluating the Enhanced Recovery After Surgery Protocol practice levels of nurses employed by Turkish surgical clinics, 88.97% of the participants said that their workplace did not follow Enhanced Recovery After Surgery protocol (Ongün, P. and Ak, E.S., 2020).

A Vietnamese electronic survey found that nurses and anesthesia technicians who were at the university level or higher had higher practice scores (7/10) for the Enhanced Recovery After Surgery program compared to those who were not ($p = 0.015$) (Bang, H.T., et al. 2024).

According to a cross-sectional study conducted in China, the majority of nurses self-reported that they practiced Enhanced Recovery After Surgery "about half the time" to "always," with a total score of ≥ 4.00 and a lower quartile score of 4.29 (3.93, 4.79) (Liu, K.X., et al. 2023).

Based on a research conducted at Kenyatta General Hospital, the most impacted factors were prehabilitation and the usage of preoperative clear carbohydrate beverages, with a compliance mean score of 50.2% (SD=17). Notably, as seniority increased (by length of experience and training level), compliance to the prptocol declined for all groups (Warui, J.K., 2022).

The majority of ACCPM (70%) and surgical teams (58%) use Enhanced Recovery After Surgery efficiently, according to an institution-based cross-sectional prospective observational study conducted at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. But just 36% of nurses use good ERAS procedures. The highest percentage of good practice is found among participants with one to five years of work experience (Ashagrie, et al. 2021).

2.4. Factors associated with the practice of ERAS protocol

There are several factors that affect the practice of the ERAS protocol among health care professionals. The following section discusses the existing information on this particular point in three separate categories namely sociodemographic, profession related and cognitive factors.

2.4.1. Sociodemographic Factors

Findings suggest that age, plays a key role in ERAS protocol adoption. According to a multicenter cross-sectional study from Ethiopia, where a total of 462 surgical nurses were participated, those aged 30–40 had a significantly greater likelihood of ERAS protocol adaption as compared to other age groups (COR = 2.828, AOR = 4.385) (Alimawu, A.A, et al. 2024). Similarly a cross-sectional survey in France with 223 participants, participants who used ERAS were mostly older (median age 44) as compared to those who didn't use the protocol (median age 33 years) ($p < 0.001$) (Clent A, et al. 2024).

Marital status was found to be associated with ERAS protocol practice in the above mentioned Ethiopian study. The study shows that compared to married nurses, who had a substantial negative correlation with good practice (COR = 0.165, AOR = 0.221), single nurses were much more likely to practice well (85.6%) (Alimawu, A.A, et al. 2024).

In the aforementioned study, protocol adherence levels were likewise correlated with participants' educational status. The study found that nurses holding a Master's degree or higher were more likely to exhibit good practice compared with those with a Bachelor's degree or lower. (COR = 3.706, AOR = 4.070) (Alimawu, A.A, et al. 2024).

2.4.2. Work-related factors associated with eras protocol practice

Work-related parameters such as years of experience, professional role, surgical unit, facility where you work, and so on have been linked to ERAS protocol practice in several articles. Participants working in teaching hospitals had considerably higher rates of effective practice (COR = 4.199, AOR = 2.637) compared to those working in non-teaching hospitals. Individuals who received on-the-job training have significantly higher likelihood of adhering to the protocol (COR = 7.817, AOR = 1.974) compared to those without training (Alimawu, A.A, et al. 2024).

According to a French study, participants who used ERAS protocol were more likely to be anesthesiologists (9.7% vs. 0.9%, $p = 0.031$) or surgeons (22.6% vs. 2.7%, $p = 0.001$), and more likely to work in an institution (96.8% vs. 72.6%, $p = 0.003$), while self-employed professionals were less likely to use ERAS (3.2% vs. 19.5%, $p = 0.028$) (Clent A, et al. 2024).

2.4.3. Cognitive Factors

Knowledge was significantly linked to non-utilization in terms of behavioral determinants; 61.9% of non-practitioners identified knowledge barriers, while only 19.4% of ERAS practitioners did ($p < 0.001$, RR = 3.2). Furthermore, there was a significant difference in the intention of practitioners to implement ERAS (61.3% vs. 0.0%, $p < 0.001$), and fewer ERAS users reported negative beliefs (16.1% vs. 1.8%, $p = 0.005$) (Clent A, et al. 2024).

Recent literature continues to emphasize the multifaceted nature of barriers to Enhanced Recovery after Surgery (ERAS) implementation. For instance, knowledge gaps among providers have repeatedly been identified as a significant obstacle, as reported by 61.9% of non-practitioners compared to just 19.4% of ERAS users ($p < 0.001$) (Ehlers, et al. 2022). Similarly, motivational constraints within teams are highlighted by the lack of intention to adopt ERAS, which was evident in 61.3% of practitioners but absent among non-users ($p < 0.001$) (Wang, et al. 2022). Additionally, practitioners' (16.1%) and non-practitioners' (1.8%) views on outcomes differed significantly ($p = 0.005$) (Pearsall, et al. 2015).

2.4. CONCEPTUAL FRAMEWORK

The following sketch diagram was constructed by the principal investigator based on the literature review presented in the above section. It tries to show the relationship between the outcome variable practice and the factors associated with it. It was developed by the PI after multiple literatures were reviewed.

Figure 1. Conceptual framework showing Factors Associated with the ERAS Protocol Practice among Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (developed from literatures by the investigator)

3. Methods and Materials

3.1. Study Area And Period

The study was conducted in the two public hospitals of Harar town namely Hiwot Fana Comprehensive Specialized University Hospital and Jugal general hospital. Harar is located in Harari region, about 526 Km away from Addis Ababa the capital city of Ethiopia. There are seven hospitals in the city; these are a teaching, a regional, a police, a defense force and two private hospitals. In addition, there are eight health centers, 31 private clinics, 26 health posts and one regional laboratory.

HFCSUH and Jugal hospital are serving as a referral hospital for most of eastern part of the country. The hospitals provide various surgical services namely general surgery, pediatric surgery, neurosurgery, urologic surgery, ENT, maxillofacial, gynecological, orthopedic, and plastic and selected laparoscopic surgeries.

This study was conducted among surgical and anesthesia personnel involved in those surgical procedures and postoperative patient care from September 1 to October 30, 2025.

3.2. STUDY DESIGN

Hospital based cross sectional study design was used.

3.3. POPULATION

3.3.1. SOURCE POPULATION

All health care professionals in all public hospitals of Harar city.

3.3.2. STUDY POPULATION

All surgical and anesthesia health care professionals working in the two hospitals during the study period.

3.4. ELIGIBILITY CRITERIA

3.4.1. INCLUSION CRITERIA

All surgical (surgical residents, surgeons, nurses working in surgical ward and operating theatres nurses) and anesthesia professionals (anesthetists, ACCPM residents and consultants) working in the two hospitals during the study period.

3.4.2. EXCLUSION CRITERIA

- Student nurses and nurses on rotation in other departments
- Doctors, anesthetists and theatre nurses who are on annual or maternity leave at the time of the study was excluded.

3.5. SAMPLE SIZE DETERMINATION

The sample size for KAP was calculated by using the formula for single population proportion.

$n= (Z_{a/2})^2 P*(1-P)/ d^2$

Where n is the sample size required; d, margin of error of 5% (d = 0.05); Z, the degree of accuracy required at 95% confidence level = 1.96. According to a multicenter cross-sectional study from central and northern Ethiopia the prevalence of inadequate knowledge, poor attitude and non-practice of the ERAS protocol is 35.9%, 48.1% and 69.9% respectively (Alimawu, A.A, et al. 2024). Replacing each P in the formula for the 1st, 2nd and 3rd objectives. **$n = (Z_{a/2})^2 P*(1-P)/ d^2$**, we get 354, 384 and 323 respectively.

The sample size for factors associated with the ERAS protocol practice (Specific Objective 4) was calculated using OpenEpi as it is depicted in the table below as well.

Table 1. Shows sample size calculation for Factors Associated with the practice of ERAS protocol among health care professionals of Public Hospitals of Harar, Eastern Ethiopia, 2025.

Variables	Assumptions	Sample size	References
Age (30-40)	AOR = 4.385 Percent of control exposed = 18 Power = 80% Ratio 1:1	66	(Alimawu, A.A, et al. 2024)
Being single	AOR = 0.221 Percent of control exposed = 86 Power = 80% Ratio 1:1	84	
Having master's degree	AOR = 4.07 Percent of control exposed = 70 Power = 80% Ratio 1:1	72	

The second objective yield the highest sample size of 384. Adding 10% for possible non response we get a final sample size of 423.

3.6. SAMPLING TECHNIQUE AND PROCEDURES

During actual data collection, the updated human resource listing revealed that the total number of eligible surgical professionals available in both hospitals was 290, substantially lower than the initial estimate. Given the reduced population size, a census approach was used whereby all 290 eligible professionals were invited to participate.

3.7. DATA COLLECTION METHOD

3.7.1. DATA COLLECTION INSTRUMENTS

A structured questionnaire is developed after reviewing different literatures by the investigator. It is arranged in five parts.

Part 1: Socio demographic characteristics like sex, age, and marital status.

Part 2: profession related information

Part 3: Contains questions aimed to assess the participants' level of knowledge towards the ERAS protocol.

Part 4: Contains questions aimed to assess the participants' attitude towards the ERAS protocol.

Part 5: Contains questions aimed to assess the participants' level of practice of ERAS protocol.

3.7.2. DATA COLLECTORS

One medical intern was be used as a data collector. The data collector's role included distributing the link to eligible participants, guide participants who need support, ensure consent and report daily collection status. One BSc nurse from the surgical ward supervised the data collection.

3.7.3. DATA COLLECTION PROCEDURE

A structured, self-administered questionnaire was developed using kobo tool box to assess the knowledge, attitude, practice and factors associated with the practice of ERAS protocol among health care professionals in public hospitals of Harar town, eastern Ethiopia. The questionnaire is designed in English. Data collection was conducted from September 1 to October 30, 2025.

The form link was distributed electronically through institutional communication platforms such as email, WhatsApp, and Telegram.

3.8. STUDY VARIABLES

3.8.1. DEPENDENT VARIABLES

- Practice (consistent/inconsistent)

3.8.2. INDEPENDENT VARIABLES

- **Sociodemographic characteristics**
  - Age
  - Sex
  - Educational level
  - Marital status

- **Profession related factors**
  - Years of experience
  - Professional role
  - Surgical unit
  - Facility type
- **Cognitive factors**
  - Knowledge (Adequate/Inadequate)
  - Attitude (Positive/Negative)

3.9. OPERATIONAL DEFINITION

- **Adequate Knowledge:** if a participant correctly answers > 75% of the questions on ERAS protocol, including its components, advantages, and its use in surgical settings, they are deemed to have adequate knowledge (Yosef, T., 2023).
- **Inadequate Knowledge:** if a participant successfully answers less than 75% of the knowledge-related questions on the ERAS protocol, they are said to have inadequate knowledge (Yosef, T., 2023).
- **Positive Attitude:** On the attitude assessment scale, a participant is considered to have a positive attitude if they receive a score of at least 75% (Shamil, M., Legese, N. and Tadiwos, Y., 2021).
- **Poor Attitude:** participants with a score < 75% on the attitude evaluation scale are considered to have a negative attitude towards ERAS protocol (Shamil, M., Legese, N. and Tadiwos, Y., 2021).
- **Consistent Practice:** if a participant reports consistently using the ERAS protocol in all surgical procedures and completing all three phases in accordance with WHO recommendations, then that participant is said to have consistent practice (WHO. 2008).

3.10. DATA QUALITY CONTROL

A pretest was conducted on randomly selected 20 health care professionals who are working at Harar general hospital in the department of surgery and anesthesia, a week before the actual data collection. Then, adjustments was made on the tool for final data collection. Each questionnaire was checked for completeness, clarity, consistency, and accuracy by the PI. Any missed or incorrectly filled form was sent back to the respective individual for correction. Data cross check and data cleanup was done before analysis.

3.11. METHODS OF DATA PROCESSING AND ANALYSIS

The study participants were categorized as having adequate/inadequate knowledge, positive/negative attitude and consistent/inconsistent practice. The independent variables also were categorized based on respective standards; after categorization was completed, each variables was checked for missing values and normality test was performed. The data was entered in to stata version 17 statistical software for analysis. Descriptive statistics such as mean, frequency, percentage and other measures were used to describe the independent variables. Multi-collinearity

was checked using variance inflation factor. Multi-collinearity was checked using the variance inflation factor (VIF). The mean VIF was 1.13 and all the individual vif were < 5 showing no multi-collinearity between the independent variables. A bivariable binary logistic regression analysis was done to select the variables to be entered into the final multivariable binary logistic regression. Explanatory variables with p value less than 0.20 in bivariable logistic regression were entered into the multivariable logistic regression model and association between the independent variables and level of practice was assessed using odds ratio at a 95% confidence interval. Every variable with P-values less than 0.05 in the multivariable logistic model was considered as statistically significant. The model's fitness was evaluated based on Hosmer and Lemeshow's goodness-of-fit statistics. Since the p value was 0.3379 and it's greater than 0.05 there is no evidence that the model is poor fit.

3.12. ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the Institutional Health Research Ethics review Committee (IHREC) of Haramaya University, College of Health and Medical Sciences via a letter written with Ref No.IHREC/163/2025. After explaining the aim and the benefit of the study informed, voluntary written and signed consent was obtained from the medical directors of HFCSH, Jugal general hospital, and the study participants. All the information retrieved are kept in a way that it could not interfere in personal confidentiality. Confidentiality of the information is also maintained by omitting participants' names and personal identification.

3.13. PLAN FOR DISSEMINATION OF STUDY RESULT

The finding of the study will be submitted to the school of medicine, school of graduate studies of College of Health and Medical Sciences Haramaya University. The copy of the research will be given to the hospitals as well. Upon approval, this study will be made available to the HU, CHMS, school of graduate studies library. There is also a plan for publication in a peer-reviewed reputable journal to keep the information as widely available as possible.

4. RESULTS

4.1. Socio Demographic Characteristics Participants

A total of 290 healthcare professionals were approached, and 270 completed the questionnaire, resulting in a response rate of 93.1%, The mean age of participants was 32.61 years ± 5.71 SD. Nearly three-fourth of the participants 196 (72.59%) were males. (Table 2).

Table 2. Socio demographic characteristics of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

Variables	Categories	Frequency (%)
Age	≤32 years	158 58.52
	>32 years	112 41.48
Sex	Female	74 27.41
	Male	196 72.59
Marital status	Unmarried	126 46.67
	Married	144 53.33
Educational status	Undergraduate	169 62.59
	Postgraduate	101 37.41
Residency	Rural	12 4.44
	Urban	258 95.56

4.2. Profession Related Characteristics of participants

Slightly less than half 122 (45.19%) of the participants have >5Yrs work experience. (Table 3).

Table 3. **Profession Related Characteristics of** Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

Variables	Categories	Frequency (%)
Work experience	≤5Yrs	148 54.81
	>5Yrs	122 45.19
Type of health facility they work in	General Hospital	156 57.78
	Referral/Teaching	114 42.22
Surgical unit	General surgery	170 62.96
	OBGY	61 22.59
	Orthopedic	39 14.44
Professional role	Anesthesia providers	55 20.37
	Other Physicians*	104 38.52
	Nurse	111 41.11

**other than anesthesia*

4.3. Cognitive Characteristics of the Participants

4.3.1. Knowledge level

About 161 (59.6%) participants had heard of ERAS, and 176 (65.2%) correctly recognized its goal of reducing complications and shortening hospital stay. However, just 93 (34.4%) knew that routine nasogastric tube use should be avoided. Awareness of carbohydrate loading was relatively low, with 97 (36.1%) answering correctly, and less than one-fifth, 45 (16.7%), understood that prophylactic abdominal drains should not be routinely used (Table 4).

Table 4. Responses for knowledge assessing items of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

No.	**Knowledge Items**	**Responses (frequency/%)**		
		Yes	**No**	**Not sure**
1.	Have you heard of the ERAS (Enhanced Recovery After Surgery) protocol?	161 (59.63)	78 (28.89)	31 (11.48)

2.	Does ERAS aim to reduce complications and hospital stay after surgery?	176 (65.19)	17 (6.30)	77 (28.52)
3.	Is ERAS limited to colorectal surgery only?	22 (8.15)	143 (52.96)	105 (38.89)
4.	Does the ERAS protocol recommend preoperative patient education and counseling?	186 (68.89)	11 (4.07)	186 (68.89)
5.	Are patients allowed to drink clear fluids up to 2–3 hours before surgery under ERAS?	132 (48.89)	55 (20.37)	83 (30.74)
6.	Is carbohydrate loading the night before and the morning of surgery recommended?	97 (36.06)	67 (24.91)	105 (39.03)
7.	Does ERAS advocate for the avoidance of routine nasogastric tubes postoperatively?	93 (34.44)	49 (18.15)	128 (47.41)
8.	Is early postoperative feeding (within 24 hours) part of the ERAS protocol?	171 (63.33)	19 (7.04)	80 (29.63)
9.	Should prophylactic abdominal drains be routinely used in ERAS?	45 (16.73)	97 (36.06)	127 (47.21)
10.	Is early mobilization (e.g., ambulation within 24 hrs) emphasized in ERAS?	202 (75.09)	10 (3.72)	57 (21.19)

Based on the operational definition, participants' knowledge levels toward the ERAS protocol were categorized as adequate/inadequate. As shown in Figure 3, the majority of participants, 214 (79.3%), had inadequate knowledge about the ERAS protocol.

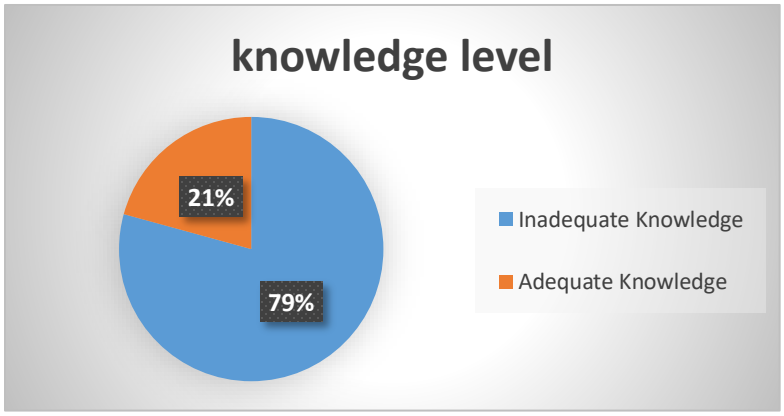

Figure 2. Knowledge level towards the ERAS protocol of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

4.3.2. Attitude towards Protocol

A large majority, 159 (58.9%), either agreed or strongly agreed that ERAS improves patient outcomes, and 162 (60.0%) supported multidisciplinary collaboration as essential for implementation. Likewise, 163 (60.4%) believed that ERAS can be realistically applied in their

hospitals. However, only 91 (33.7%) felt confident implementing ERAS in their daily practice, and about 134 (49.6%) viewed ERAS as increasing workload without significant benefit.

Table 5. Responses for attitude assessing items of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

No.	Attitude Items	Responses (frequency/%)				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I believe ERAS improves patient outcomes.	16 (5.93)	7 (2.59)	88 (32.59)	84 (31.11)	75 (27.78)
2.	I am confident in implementing ERAS in my daily practice.	15 (5.56)	29 (10.74)	135 (50.00)	64 (23.70)	27 (10.00)
3.	Multidisciplinary collaboration is essential for successful ERAS implementation.	11 (4.07)	10 (3.70)	87 (32.22)	78 (28.89)	84 (31.11)
4.	I believe the ERAS protocol can be realistically implemented in our hospital.	15 (5.56)	43 (15.93)	133 (49.26)	59 (21.85)	20 (7.41)
5.	ERAS increases workload without significant benefit.	62 (22.96)	72 (26.67)	99 (36.67)	24 (8.89)	13 (4.81)
6.	I would recommend ERAS training for all surgical staff.	11 (4.07)	10 (3.70)	86 (31.85)	55 (20.37)	108 (40.00)
7.	ERAS protocols are adaptable to various surgical units, not just colorectal.	12 (4.44)	10 (3.70)	99 (36.67)	76 (28.15)	73 (27.04)

Based on the operational definition, participants' attitudes toward the ERAS protocol were categorized as positive/negative. As shown in Figure 4, the majority of participants, 218 (80.74%), had negative attitude about the ERAS protocol.

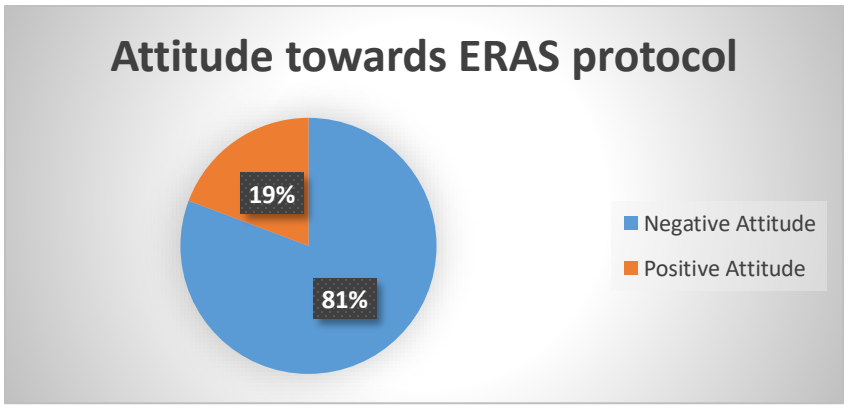

Figure 3. Attitude towards the ERAS protocol of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

4.3.3. Level of protocol practice

More than half of the respondents, 145 (53.7%), reported always providing preoperative counseling, while 119 (44.4%) consistently ensured early mobilization within 24 hours after surgery. However, fewer respondents routinely applied key elements such as reduced fasting time, with only 50 (18.6%) always recommending clear fluids up to 2 hours before surgery, and just 18 (6.7%) using carbohydrate loading regularly.

Table 6. Responses for practice assessing items of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

No.	Practice Items	Responses (frequency/%)			
		Always	Sometimes	Rarely	Never
1.	I provide preoperative counseling to surgical patients.	145 (53.70)	88 (32.59)	26 (9.63)	11 (4.07)
2.	I recommend reduced fasting times (clear fluids up to 2 hours before surgery).	50 (18.59)	85 (31.60)	52 (19.33)	82 (30.48)
3.	I use carbohydrate loading in appropriate preoperative patients.	18 (6.67)	66 (24.44)	60 (22.22)	126 (46.67)

4.	I avoid routine use of nasogastric tubes postoperatively.	85 (31.72)	60 (22.39)	78 (29.10)	45 (16.79)
5.	I encourage early oral intake after surgery.	97 (35.93)	78 (28.89)	52 (19.26)	43 (15.93)
6.	I ensure early mobilization of patients within 24 hours of surgery.	119 (44.40)	99 (36.94)	41 (15.30)	9 (3.36)
7.	I avoid prophylactic use of abdominal drains in elective colorectal surgery.	75 (27.88)	75 (27.88)	77 (28.62)	42 (15.61)
8.	I engage in multidisciplinary care planning for ERAS cases.	41 (15.19)	99 (36.67)	100 (37.04)	30 (11.11)

Based on the operational definition, participants' practice of the ERAS protocol were categorized as consistent/inconsistent. As shown in Figure 5, the majority of participants, 174 (64.44%), had inconsistent Practice of the ERAS protocol.

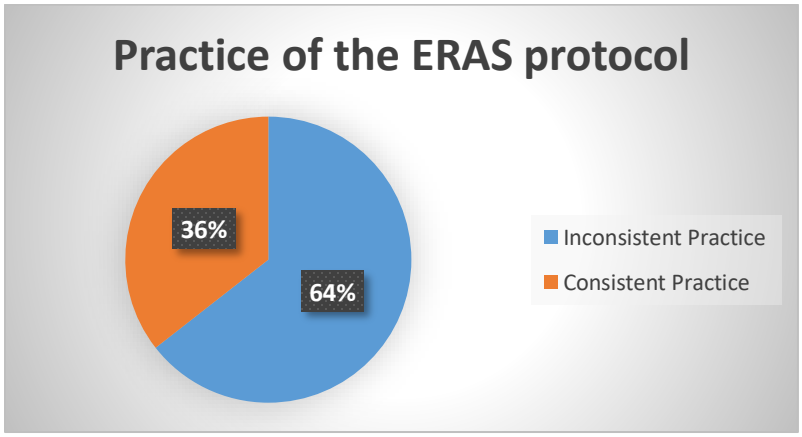

Figure 4. Practice of the ERAS protocol of Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

4.4. Factors Associated with the Practice of ERAS Protocol

All variables with a p-value of less than 0.2 in the bivariable logistic regression were included in the multivariable model. These included marital status, facility type, work experience, knowledge level, and attitude towards the protocol.

A multivariable logistic regression analysis was conducted to determine the factors independently associated with consistent practice of the Enhanced Recovery After Surgery (ERAS) protocol. The final model, which included marital status, facility type, years of clinical experience, and attitude toward ERAS, showed an adequate fit to the data (Pearson χ^2 (11) = 12.35, p = 0.338).

After controlling for other variables, respondents working in referral or teaching hospitals were almost twice as likely to consistently apply ERAS principles compared with those working in general hospitals (AOR = 1.89, 95% CI: 1.12–3.19, p = 0.018). Participants with more than five years of clinical experience had 57% lower odds of practicing ERAS consistently compared with those with five years or less experience (AOR = 0.43, 95% CI: 0.24–0.79, p = 0.006). Likewise, those who held a positive attitude toward the ERAS protocol were about twice as likely to report consistent practice compared with participants who had a negative attitude (AOR = 2.11, 95% CI: 1.11–4.00, p = 0.022).

Table 7. Factors Associated with consistent practice of the ERAS protocol among Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025 (N=270).

Factors	Categories	Practice		COR (95%CI)	AOR (95%CI)	P value
		Inconsistent (%)	Consistent (%)			
Facility type	General Hospital	110 (70.51)	46 (29.49)	1	1	
	Referral/Teaching	64 (56.14)	50 (43.86)	1.87 (1.13 - 3.10)	1.89 (1.12 - 3.19)	0.018
Work experience	≤5Yrs	81 (54.73)	67 (45.27)	1	1	
	>5Yrs	93 (76.23)	29 (23.77)	0.38 (0.81 - 2.70)	0.43 (0.24 - 0.79)	0.006*
Attitude	Negative	149 (68.35)	69 (31.65)	1	1	
	Positive	25 (48.08)	27 (51.92)	2.33 (1.26 - 4.31)	2.11 (1.11 - 4.00)	0.022

*Note *p value <0.01, COR= crude odds ratio, AOR= adjusted odds ratio.*

5. DISCUSSION

In this study, 79.3% of participants demonstrated inadequate knowledge about the ERAS protocol. This finding is consistent with previous studies conducted in Turkey (Ongün et al., 2020) and Kenya (Warui et al., 2022), which reported widespread knowledge gaps among surgical team members. Similar patterns were observed in Vietnam and China (Bang et al., 2024; Liu et al., 2023), where significant variations in knowledge were noted by age, experience, and professional role. Conversely, higher awareness levels reported among anesthesia and critical care professionals in Addis Ababa (Ashagrie et al., 2021) suggest that training and institutional exposure play key roles in improving ERAS literacy. The low knowledge level in the present study may reflect limited training opportunities and the absence of formal ERAS implementation programs within the study hospitals.

Regarding attitude, the majority of respondents (80.7%) exhibited a negative attitude toward the ERAS protocol. This aligns with the findings of (Ongün et al., 2020), who reported that most nurses were uncertain about the protocol's value, and (Bang et al. 2024), who observed lower attitude scores among younger staff and those in specific surgical units. By contrast, more favorable attitudes were reported in studies from China and Tikur Anbessa Hospital (Liu et al., 2023; Ashagrie et al., 2021), suggesting that institutional awareness and interdisciplinary collaboration contribute to shaping positive perceptions. The predominance of negative attitudes in this study may stem from misconceptions about ERAS increasing workload or from a lack of visible institutional support for its implementation.

In terms of practice, only 36% of participants demonstrated consistent ERAS practice. This aligns with international literature showing poor ERAS protocol adherence, particularly in low-resource settings (Ongün et al., 2020 and Warui et al., 2022). In contrast, higher compliance rates have been reported in institutions with structured ERAS programs and multidisciplinary training (Ashagrie et al., 2021). In this study, practices such as early mobilization and postoperative feeding were relatively well observed, while carbohydrate loading and reduced fasting times were poorly implemented, similar to patterns described in other African and Asian studies, where preoperative elements are least practiced.

Healthcare professionals working in referral or teaching hospitals were almost twice more likely to consistently apply ERAS principles compared with those in general hospitals. This finding

agrees with Alimawu et al. 2024, who found higher adherence in teaching hospitals, likely due to better resources, academic exposure, and interdisciplinary support.

Professionals with more than five years of experience had 57% lower odds of consistent practice compared to those with fewer years of experience, echoing observations by Warui et.al. 2022 and Ashagrie et al. 2021, where younger staff were more engaged in protocol-driven care, possibly due to recent training and openness to change.

In this study, healthcare professionals with a positive attitude toward ERAS were twice as likely to practice it consistently, which aligns with findings from Clent et al. (2024) and Ehlers et al. (2022) that emphasize motivation, belief in the protocol's benefits, and cognitive readiness as key determinants of adherence

5.1. STRENGTH AND LIMITATION OF THE STUDY

5.1.1. Strength of the Study

A major strength of this study is its inclusion of diverse healthcare professionals, physicians, anesthesia providers, and nurses, allowing for a comprehensive understanding of multidisciplinary ERAS practice.

5.1.2. Limitations of the Study

As a cross-sectional study, causality cannot be inferred. The self-reported nature of responses may also introduce social desirability and recall biases, particularly concerning practice behaviors.

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

This study discovered that the majority of healthcare personnel in Harar's public hospitals had insufficient understanding and negative views about the ERAS protocol, with only a minority regularly implementing its components on a daily basis. Professionals working in referral or teaching hospitals, as well as those with a positive attitude, were more likely to practice consistently than those with more clinical experience.

These findings highlight the crucial role of training, supporting institutional contexts, and attitude change in improving ERAS implementation. Raising awareness, encouraging multidisciplinary teamwork, and incorporating ERAS into institutional surgical protocols could all improve perioperative care and patient recovery results.

6.2. Recommendation

To Healthcare Professionals: Participate in continuing professional development programs and ERAS-specific courses to improve your understanding and confidence in using protocol components. Encourage interdisciplinary collaboration to ensure consistent implementation across the perioperative pathway.

To hospitals and administrators: Integrate ERAS principles into institutional surgical care policy and offer structured training to surgical teams. Establish ERAS implementation committees and make sure that resources for protocol adherence are available, such as patient education materials, dietary support, and multidisciplinary coordination.

To the Future Researchers: Conduct longitudinal and qualitative research to investigate the barriers and facilitators of ERAS adoption in more depth. Assess the effects of structured ERAS training interventions on patient outcomes and provider adherence in various hospital settings.

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8. ANNEXES

8.1. INFORMATION SHEET AND INFORMED VOLUNTARY CONSENT FORM FOR HOSPITAL ADMINISTRATIONS

My name is Dr. Addis Bekele. I am the principal investigator of the study to be conducted in Hiwot Fana comprehensive specialized University hospital and Jugal general hospital. I am studying Anesthesiology, Critical Care and Pain Medicine at Haramaya University, College of Health and Medical Science. I kindly request you to lend me your attention to explain about this study.

The Study Title: The study title is "Assessment of KAP and factors associated with the practice of ERAS Protocol among Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025."

The purpose/Aim of the Study: The purpose of this study is to establish a local hospital based information on the KAP of the ERAS protocol among health care professionals in Public Hospitals of Harar, Eastern Ethiopia, and September 1 to October 30, 2025. The finding of this study will provide up-to-date information for the health professionals working in the Hospitals. The finding of this study will provide information on the depth of the problem and guidance for preventive intervention. Also will serve as entry point for future studies. Moreover, the main aim of this study is to write a thesis as a partial fulfillment of my training in anesthesiology, Critical Care and pain medicine.

Procedure and Duration: the surgical and anesthesia personnels will be asked to fill out a set of self-administered questions. There are 35 items arranged in 6 sections to fill out and it will take about 20 minutes.

Risk and Benefit: The risk of participating in this study is very minimal which is taking couple of minutes from their time. The investigator will not pay any direct cash for study participants for participating in this study.

Confidentiality: Participant's information will be confidential. The finding of the study will be general and will not reflect anything about particular individual information. The questionnaire will be coded with a unique identification number to exclude showing names. No reference will be made in oral or written reports that could link participants in the study.

Rights: You have, therefore, a full right to permit or not for this research to be done in this hospital. If you decide to permit you have again the right to stop the study whenever you notice violation of research ethics.

Contact Address: If you have any questions or inquiries about the study any time you can contact the principal investigator by using his mobile phone number: **+251-985850291/ Dr. Addis Bekele and/or E-mail:** **bekelea756@gmail.com** or the Institutional Health Research Ethics Review Committee of the College of Health and Medical Sciences using their office phone number: +251-254-662-011 or P.O.Box: 235, Harar, Ethiopia.

Declaration of Informed Voluntary Consent

I have read the information sheet. I have clearly understood the purpose of the study, the procedure, the risk and benefit of the study, and issues of confidentiality. The contact address was given to me for any queries. I have been given the opportunity to ask questions about things that have been unclear. I understand that participant has the right to withdraw from the study at any time or not to answer any question that they do not want and also I was informed that i have a full right to permit or not for this research to be done or not in this hospital. Therefore, I declare my voluntary on behalf of the Hospital Management to allow this study to be conducted in our Hospital with my signature.

Name of the hospital Manager: _____Signature:_____Date: ____/____/2025

Name of the Principal Investigator: _____Signature: _____Date: __/___/2025

8.2. PARTICIPANT INFORMATION SHEET AND INFORMED CONSENT FORM FOR PARTICIPANTS

My name is _____. I am working as a data collector for the study being conducted in this hospital Dr. Addis Bekele (ACCPM resident), who is studying his Anesthesiology, Critical Care and Pain Medicine at Haramaya University, College of Health and Medical Science. I kindly request you to give me your attention to explain about the study and being selected as the study participant.

The study title: Assessment of KAP and factors associated with the practice of ERAS Protocol among Health Care professionals in Public Hospitals of Harar, Eastern Ethiopia, 2025.

Purpose of the study: The purpose of this study is to establish a local hospital based information on the KAP of the ERAS protocol among health care professionals in Public Hospitals of Harar, Eastern Ethiopia, and September 1 to October 30, 2025. The finding of this study will provide up-to-date information for the health professionals working in the Hospitals. The finding of this study will provide information on the depth of the problem and guidance for preventive intervention. Also will serve as entry point for future studies. Moreover, the main aim of this study is to write a thesis as a partial fulfillment of my training in anesthesiology, Critical Care and pain medicine.

Procedure and Duration: the surgical and anesthesia personnel will be asked to fill out a set of questions. There are 35 items arranged in 6 sections to fill out and the time required is approximately about 20 minutes.

Risk and benefits: The risk of participating in this study is very minimal, which is only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings of this study may reveal important information for the hospitals and other health offices to fill the gaps identified through this study.

Confidentiality: The information you provide for me will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study area and will not reflect anything about particular individuals. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the study.

Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in the 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.

Contact address: If you have any questions about the study, the procedure or anything else related to the study, please contact through the following address:

Mobile phone of Principal investigator **+251-985850291/ Dr. Addis Bekele and/or E-mail:** **bekelea756@gmail.com**. And/or Institutional research ethics review committee (IHRERC) Haramaya University: Office phone: +251-254-662-011: P.O.BOX: 235, Harar.

Declaration of informed voluntary consent:

I have read/the data collector has 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, the rights of participating and contact address for any queries. 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 stop the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to allow this study to be conducted with my initials (signature) as indicated below.

Name of the participant: _____Signature: _____ Date: ____/____/2025

Name of the data collector: ----------Signature: ----------Date: -------/------/2025

N.B: This is to be signed face to face in the presence of data collector.

Thank you for your cooperation!

8.3. QUESTIONNAIRE

Part 1: Socio-demographic characteristics

No	Variables	Response and codes
101.	Age	_____ (in years)
102.	Sex	01. Male 02. Female
103.	Marital status	01. Single 02. Married 03. Divorced 04. Widowed
104.	Educational level	01. Diploma 02. BSc 03. MSc 04. Other (specify) _____

Part 2: Profession-Related Factors

No.	Factors	Response and codes
201.	Professional role	01. Surgeon 02. Anesthetist 03. Anesthesiologist 04. Residents 05. Nurse 06. Physiotherapist 07. Dietitian 08. Other: (specify)_____
202.	Years of clinical experience	01. <2 02. 2–5 03. 6–10 04. >10
203.	Surgical unit	01. General 02. Colorectal 03. OB-Gyn 04. Orthopedic 05. ENT 06. Other: (specify)_____

204.	Type of facility	01. Primary hospital 02. General hospital 03. Referral/Teaching 04. Private clinic/hospital

Part 3: Knowledge of ERAS Protocol

No.	Items	Responses and codes
301.	Have you heard of the ERAS (Enhanced Recovery After Surgery) protocol?	01. Yes 02. No 03. Not sure
302.	Does ERAS aim to reduce complications and hospital stay after surgery?	01. Yes 02. No 03. Not sure
303.	Is ERAS limited to colorectal surgery only?	01. Yes 02. No 03. Not sure
304.	Does the ERAS protocol recommend preoperative patient education and counseling?	01. Yes 02. No 03. Not sure
305.	Are patients allowed to drink clear fluids up to 2–3 hours before surgery under ERAS?	01. Yes 02. No 03. Not sure
306.	Is carbohydrate loading the night before and the morning of surgery recommended?	01. Yes 02. No 03. Not sure
307.	Does ERAS advocate for the avoidance of routine nasogastric tubes postoperatively?	01. Yes 02. No 03. Not sure
308.	Is early postoperative feeding (within 24 hours) part of the ERAS protocol?	01. Yes 02. No 03. Not sure
309.	Should prophylactic abdominal drains be routinely used in ERAS?	01. Yes 02. No 03. Not sure
310.	Is early mobilization (e.g., ambulation within 24 hrs) emphasized in ERAS?	01. Yes 02. No 03. Not sure

Part 4: Attitude Toward ERAS Protocol

No.	Items	Responses and codes
401.	I believe ERAS improves patient outcomes.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
402.	I am confident in implementing ERAS in my daily practice.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
403.	Multidisciplinary collaboration is essential for successful ERAS implementation.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
404.	I believe the ERAS protocol can be realistically implemented in our hospital.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
405.	ERAS increases workload without significant benefit.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
406.	I would recommend ERAS training for all surgical staff.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree
407.	ERAS protocols are adaptable to various surgical units, not just colorectal.	☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree

Part 5: Practice of ERAS Protocol

No.	Items	Responses and codes
501.	I provide preoperative counseling to surgical patients.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
502.	I recommend reduced fasting times (clear fluids up to 2 hours before surgery).	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
503.	I use carbohydrate loading in appropriate preoperative patients.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never

504.	I avoid routine use of nasogastric tubes postoperatively.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
505.	I encourage early oral intake after surgery.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
506.	I ensure early mobilization of patients within 24 hours of surgery.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
507.	I avoid prophylactic use of abdominal drains in elective colorectal surgery.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
508.	I engage in multidisciplinary care planning for ERAS cases.	☐ Always ☐ Sometimes ☐ Rarely ☐ Never

8.4. CURRICULUM VITAE

Personal Information

Name: Addis Bekele Geteneh

Phone: +251 985 850 291

Email: bekelea756@gmail.com

Date of Birth: 1992 (Gregorian calendar)

Place of Birth: Chelenko, Eastern Hararge, Ethiopia

Nationality: Ethiopian

Marital Status: Married

Religion: Orthodox Christian

Educational Background

Doctor of Medicine, Hawassa University, College of Medicine and Health Sciences (2009 – 2015)

Secondary Education, Chellenko Senior Secondary School (2004 – 2008)

Primary Education, Chellenko Primary School (1996 – 2003)

Work Experience

General Practitioner, Harar Jugol Primary Hospital (2016 – 2022)

Served in Surgery, Gynecology/Obstetrics, Internal Medicine, and Pediatrics departments.

Served as Gender-Based Violence (GBV) Clinic focal person and care provider for 2 years.

Worked as Outpatient Department Director for 3 years.

Served as Inpatient Department Director for 6 months.

Acted as Delegate to Medical Director at various times.

Trainings, Certifications & Achievements

Certificate of Recognition for volunteer participation in Orthopedic Campaigns at Jugol Hospital — April 27, 2010

Certificate of Training in Care for Survivors of Sexual Violence — September 16–18, 2015

Certificate of Training in STI Syndromic Management — August 5–8, 2016

Certificate of Training in Vital Anesthesia Simulation — January 15–17, 2024

Certificate of Training in Basic Emergency Ultrasound — July 2024

Languages

Amharic, Afan Oromo, English