ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE

DEPARTMENT OF ANESTHESIA

ASSESSMENT OF MAGNITUDE AND ASSOCIATED RISK FACTORS OF POST OPERATIVE NAUSEA AND VOMITING AFTER ELECTIVE SURGURY UNDER GENERAL ANESTHESIA AT TIKUR ANBESA SPECIALIZED HOSPITAL: ADDIS ABABA, ETHIOPIA.

BY: CHALI TOLOSA (BSc)

A THESIS SUBMITTED TO DEPARTMENT OF ANESTHESIA, SCHOOL OF MEDICINE, COLLEGE OF HEALTH SCIENCES, ADDIS ABABAUNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR MSC IN ADVANCED CLINICAL ANESTHESIA

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MAY, 2018

ADDIS ABABA, ETHIOPIA

CERTIFICATION

The undersigned certify that the research entitled magnitude of post-operative nausea and vomiting and its associated factors among adults taking general anesthesia for elective surgical at TASH, Addis Ababa, Ethiopia Across sectional study is my original work and any literature and/or data cited in this article were listed in the reference section and any assist done during this period has been given an acknowledgement.

Author

Name _____ Signature _____ Date _____

Approval of the Board of Examiners

1. Advisor Name _____ Signature _____ Date _____
2. Internal Examiner
   Name _____ Signature _____ Date _____
3. External Examiner
   Name _____ Signature _____ Date _____

Contents

ABBREVIATION

AAU	Addis Ababa University
ASA	American Society of Anesthesiologists
AOR	Adjusted odd ratio
BMI	Body Mass Index
BSC	Bachelor of Science
CI	Confidence Interval
COR	Crud odd ratio
DC	Data collector
DEC	Data Entry Clerk
GA	General Anesthesia
GC	Gregorian calendar
PACU	Post-operative care unite
PI	Principal Investigator
MAC	minimum Alveolar Concentration
MSc	Masters of Science
OR	Odd ratio
PONV	Postoperative Nausea and Vomiting
TASH	Tikur Anbesa Specialized Hospital

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ABSTRACT

Background: Nausea and vomiting with onset during the operation and persisting in the postoperative period cause reduced patient comfort, delayed discharge from the hospital, and an increase in costs. This problem deserves more attention when some possible consequences, such as dehydration, electrolyte imbalance, wound dehiscence, venous hypertension and bleeding, rupture of the esophagus, airway obstruction, and aspiration pneumonia, are taken into account.

Objective: The objective of this research is to assess the magnitude and associated risk factors with post operative nausea and vomiting in elective surgical patient under general anesthesia at TASH , January 1 , 2018 –March 30,2018, Addis Ababa University, Ethiopia.

Methodology: A cross sectional study was conducted on surgical patients who undergo their surgical procedure at Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia from, January 1- March 30, 2018. Patient interview and chart review was employed for data collection. Collected data was analyzed using SPSS version 20.0 window to assess the magnitude and associated risk factors of post-operative nausea and vomiting (PONV) in patients undergoing surgery in the study population. Descriptive as well as analytic statistics were used for variables and data was presented by tables, graphs, charts, and texts. Independent variables with the dependent variable, PONV were analyzed using binary logistic regression.

Results: Overall magnitude of nausea and vomiting was 22.7% and 15.7% respectively. In multi logistic regression, Patients those have history of previous nausea or vomiting were 4.25 times **{AOR=4.25; 95% CI (1.32-13.6)** more likely to have nausea compared to patients those have no history of previous nausea or vomiting. In multi logistic regression female patients those undergone general anesthesia were 3.3 times **{AOR=3.3; 95% CI (1.1, 10.1)** more likely to have vomiting compared to male patients those undergone general anesthesia.

Conclusion and recommendation: The overall magnitude of vomiting and nausea in the study area were 15.7% and 22.7% respectively. Variables like sex, pre medication with opioid and history of previous nausea or vomiting had significantly associated with magnitude of nausea and vomiting. It is recommended to give premedication for patients who take opioids before surgery.

Key words: Post-operative nausea, Post-operative vomiting, General anesthesia

INTRODUCTION

1.1 BACKGROUND

As major problems of anesthesia have been overcome in modern medicine, research has focused on some other relatively minor difficulties. Most such minor problems remain unpredictable. Therefore, this field of research is important because some of these problems may progress from a state of inconvenience to a situation of disturbing morbidity(1). Vomiting may be defined as the forceful expulsion of gastric or intestinal contents through the mouth while Nausea is described as the unpleasant sensation associated with the urge to vomit or awareness of the potential to vomit(2).

Nausea and vomiting in the postoperative is remaining one of the most unpleasant side effect experienced by the patients following surgery and anesthesia. However; this problem arises even more often in major operations under anesthesia. It is defined as nausea and vomiting occurring with-in 24 hrs after surgery(3).

Nausea and vomiting during the operation and persisting in the postoperative period cause reduced patient comfort, delayed discharge from the hospital, and an increase in costs. This problem deserves more attention when some possible consequences, such as dehydration, electrolyte imbalance, wound dehiscence, venous hypertension and bleeding, rupture of the esophagus, airway obstruction, and aspiration pneumonia, are taken into account(4).

The overall incidence of Postoperative nausea and vomiting in surgical patients is 25–30% of ASA(American society of anesthesiologist) I and II patients, but for ASA III and above patients(among high-risk patients)it can be as high as 70–80%(5).

Identifying incidence and prevention of postoperative nausea and vomiting (PONV) is believed not only to increase patient satisfaction, but also to provide cost-effective care while caring for patients, anesthetist and nurses are responsible for assuring that the needs of patients are recognized and addressed(6).

The incidence of PONV remains high despite the frequent use of prophylactic antiemetic (e.g.5-HT3 antagonists, glucocorticoids, dopamine antagonists), shorter-acting anesthetics and analgesics (e.g., propofol, desflurane, remifentanil), and less invasive surgical techniques (e.g.,

laparoscopic procedures). Patient, anesthetic and surgical factors all contribute to the persistently frequent incidence of emetic symptoms in the postoperative period(7).

Multiple factors are associated with increased risk of post operative nausea and vomiting: age, gender, pre-existing diseases, premedication, history of post operative nausea and vomiting (PONV), operative procedure, anesthetics agent, analgesic drugs, anesthetics procedure and post operative symptoms(8). Updating the health professional with occurrence and exacerbating factors with post operative nausea and emetic a necessary option especially in surgical patients in immediate post operative for smooth treatments of the patients. Hence this study aims to assess the magnitude and associated factors with nausea and vomiting.

1.2 STATEMENT OF THE PROBLEM

Postoperative nausea and vomiting (PONV) is a long-standing, the most unpleasant and multi-factorial problem for anesthesia practitioners with a significant and the most distressing morbidities, associated with surgery and anesthesia that has been repeatedly investigated in surveys of incidence(9).

In addition, it is a feature of many medical and surgical conditions that range from the simply annoying, to life-threatening electrolyte upset and dehydration as well as these complications contribute not only to morbidity, but also affect patient satisfaction, delay patient discharge, and increase hospital costs ,that is why among the top concerns of anesthesiologists. Uncontrolled and persistent PONV can lead to unanticipated hospital admissions, electrolyte abnormalities and dehydration, tension on fresh suture lines, hematomas beneath surgical flaps, and increased risk of pulmonary aspiration(10, 11).

The overall incidence of PONV is estimated to be 28% to 80%, with severe, intractable PONV estimated to occur in approximately 18% of all patients undergoing surgery[(12).] As anesthesia is administered approximately 8 million times per year in Germany for surgery, this means that up to 2.4 million patients suffer from PONV every year if no prophylaxis is provided(13).

According to research conducted in Czech Republic at university hospital Olomouc the overall incidence of PONV was 15.5%, affecting 24.5% of women compared to 6.3% of men. The study done in July, 2013 at tertiary care hospital in northwestern Tanzania shows that the incidence of

postoperative nausea and vomiting was 41.4%.These rates are significant due to its the numerous risks associated with this complication(14, 15).

A study done in university of Gondar, Ethiopia showed that the prevalence of postoperative nausea and vomiting was 36.2% within 24 hours after operation. *(11).*

When PONV occurs, prompt treatment is indicated, as the likelihood of PONV to persist or to recur is at least 65% Only 5HT3 receptor antagonists have been fully researched for PONV treatment and confirmed as being effective they are, therefore, first-line drugs for treatment of PONV, especially when no prophylaxis has been administered beforehand(9).

The aim of this study will emphasize on assessments of magnitude and associated risk factors with PONV in selected hospital. So as it fills these gaps, initiate responsible bodies to treat such patients in order to take action and further increment of consideration towards to the complaints.

In conclusion, a combined multimodal approach to preventing PONV will not only improve patient satisfaction with their overall surgical experience, but also lead to a more rapid resumption of their normal activities of daily living in the early post discharge period [(13).]

The Studies were conducted in different countries and most of them come up to a conclusion that incidence of PONV significant. However, still there is a conflict among the literature on the associated risk factors; but till these study lacks literature in our study area so; since this study was focus on assessments of the magnitude and associated risk factors of post operative nausea and vomiting among elective surgical patients under general anesthesia at TASH.

1.3. JUSTIFICATION OF THE STUDY

Post-operative nausea and vomiting (PONV) is dissatisfying for patients and is among the top concerns of anesthesiologists [(14)]. The occurrence of PONV prevents patients from resuming oral intake, increases pain, delays healing, increases hospital length of stay, and increases cost. Today's limited financial resources for health care make cost a greater issue in the clinical decision making of healthcare providers. The accurate assessment of patient risk factors for PONV is necessary in developing an effective plan of care for this patient population. In order to provide economical and effective care for surgical patients, interventions must be geared towards reducing the occurrence of postoperative complications[(16).]

It also facilitates the appropriate identification of patients at risk for PONV complications, as well as initiates the health professional team to monitor patient dissatisfaction, increased lengths of stay, and high cost of interventions.

The finding of the study will be used as a literature for other researchers. From the finding, professionals will understand the gap exists on PONV. There is a need to carry out a research to come up with the magnitude and associated risk factors of PONV in the area. This research finding may be significantly important to support and contribute to libraries for present and future scholars by providing analysis of magnitude and risk factors of PONV in the study area TASH and can be identify significant factors like Individual factors, and health related factors, socio-demographic factors and other factors.

In addition, this study will have a great importance in initiation of responsible bodies in order to take action and further increment of awareness creation in order to tackling against PONV and encouraging habit of training and education of PONV in elective surgical patients under general anesthesia in TASH. Knowing its magnitude and associated factors in our situation helps to recognize the magnitude of the problem and initiates actions to reduce its occurrence.

2 LITERATURE REVIEW

2.1 PATHOPHYSIOLOGY AND OVERVIEW

Postoperative nausea and vomiting is a common complication following surgery and anesthesia.

Although the etiology of PONV is not completely clear, a number of key contributing factors increase the risk for the individual patient.

PATHOPHYSIOLOGY OF NAUSEA

Nausea is accompanied by gastrointestinal tract relaxation, duodenal peristalsis and vegetative symptoms. Generally, it precedes vomiting. The central nervous system areas connected with balance, vasomotor activity, salivation, respiration and eye motion control are located close to the vomiting center. Moreover, these areas are interconnected. The proximity of these areas is responsible for physiological vegetative reactions observed in PONV, such as salivation, sweating, frequent gulping, pallor, tachypnea, tachycardia, heart rhythm disturbances, pupil dilation and motion sickness(17, 18).

PATHOPHYSIOLOGY OF VOMITING

Vomiting is a neurologically conducted, coordinated reflex in which visceral reflexes in the medulla oblongata are integrated, in close proximity to the nucleus of the solitary tract and area postrema at the level of the dorsal motor nucleus of the vagusnerve.The diaphragm is fixed during inspiration and the stomach wall muscles contract. Peristalsis is reversed; the duodenum contracts, the cardiac relaxes and strong pressure is applied. The stomach is emptied into the esophagus. The upper esophageal sphincter opens and the soft palate lifts. At the same time, the epiglottis closes off the entrance to the lower airways, preventing aspiration. Breath is held approximately in the middle of inspiration. Vomiting is usually started by retching – rhythmical contractions of the respiratory muscles. Both vomiting and retching are brain stem reflexes. Nausea and vomiting are protective reflexes to prevent the absorption of toxins (which trigger chemo receptors in the Gastro intestinal tract(19, 20).

2.2 MAGNITUDE OF POST-OPERATIVE NAUSEA AND VOMITING.

PONV were estimated to occur with a general incidence of 25-30% in all surgical patients, with nausea occurring more frequently at 40-50% and vomiting at 25-30%depending on the surgical

population. This incidence can increase significantly with certain risk factors to a level of 70 to 80%. These rates are significant to both healthcare providers and institutions due to the numerous risks associated with this complication. These complications contribute not only to morbidity, but also affect patient satisfaction, delay patient discharge, and increase hospital costs(21, 22).

According to prospective study conducted in Czech republic (2007), a total of 1,954 patients underwent surgical procedures in general anesthesia in central and gynecological operating theatres at university hospital Olomouc, shows the overall incidence of PONV was15.5%, affecting 24.5% of women compared to 6.3% of men.(9)

Prospective interview based survey on incidence of PONV was done in Finland at university of Oulu Hospital(1997) on 1107 in patient aged 4-86 years indicates that the incidence of PONV is 52% and 25% respectively(17).

The study done in north west Tanzania (2013) show that; a total of 348 patients (age=18-76 years) were included in the study. The male to female ratio was 1.4: 1. The incidence of postoperative nausea and vomiting was 41.4%. Age group 21-30, female gender, history of PONV, general anesthesia and Intraoperative pethidine were the main predictors of PONV ($p < 0.001$). Only forty-five (31.3%) out of the 144 patients who reported their episodes of PONV received any medications(18).

2.3 INCIDENCE OF PONV

The overall incidence of postoperative nausea and vomiting at the University of Gondar (2012) teaching hospital among post-surgical patients was 36.2 % (11).

2.4 RISK FACTORS FOR PONV

2.4.1 PREOPERATIVE CONDITION

The study done in University of Finland(1997) shows that ;Male and female patients fairly comparable with respect to age and preoperative condition, apart from some disparity in the following presumed prognostic factors for PONV history of migraine was more common in females(20% vs.&4% in males):history of motion sickness, either in childhood only or in adult life as well, was reported by 26%&13% of female (the figures for male being

20%&4%,respectively;the proportion of females with PONV after previous general & regional anesthesia were 50% &14%,respectively and those of males25% and 6%,respectively;30% of males and 18% of females were regular smokers(19).

The 348 patients in Tanzania, PONV occurred in 144 (41.4%) of whom 62(43.1%) had nausea and vomiting, 55 (38.2%) had nausea only and 27 (18.8%) had vomiting only. According to univariate analysis significant pre-operative factors associated with PONV were age, sex, previous history of PONV, history of motion sickness and smoking status. According to univariate analysis, the intra-operative and postoperative factors associated with PONV were general anesthesia, pesticide use and duration of operation of more than 60 minutes(18).

The Study done in university of Gondar(2012) stated that smokers are more risky than non smokers with OR of 18.04 and at the same place indicated that patients who have history of PONV were more risky than who have not history PONV(11).

2.4.2 SURGICAL/ ANESTHESIA RELATED

The incidence of PONV was highest after or tracheal intubation (18.8%) but lower with face mask (8.9%) or laryngeal mask (6.2%) placement. PONV incidence was also influenced by the type of surgical procedure. Most frequently, PONV was associated with laparoscopy (14.6%, p = 0.0001), transvaginal (16.8%, Transvaal (15.5%, or breast (24.5%, surgery. Whereas the use of volatile anesthetics had no effect on PONV (use opioid has significantly increased the chances of developing PONV (28.6% vs. 14.6%. The study also shows highest incidence is associated with gynecological procedure (21%)(23, 24).

Although Apfel(2002) defined the risk criteria with the largest impact on PONV, multiple other risk factors have been identified. These can be broadly divided into three categories: patient risk factors (female gender from puberty, non-smoking status, previous history of PONV/ motion sickness, and genetic predisposition), anesthetic technique (inhalation agents, nitrous oxide, large-dose neostigmine and intra-operative and postoperative opioid use), and surgical procedure(longer duration of surgery and different types of surgeries). However, whether longer surgeries are directly causal is difficult to prove, since higher doses of opioid and longer exposure to inhalation anesthetics (MAC-hours) are likely to occur and are known risk factors of

PONV. Although risk factors are well defined for the population and are used to plan antiemetic therapy for a given individual. They unfortunately are not highly strong(4, 24).

2.4.3 SOCIO-DEMOGRAPHICS VARIABLES

Descriptive prospective study was conducted in Africa, Northern western Tanzania, Buganda Medical Centre(2015), shows that off total of 348 patients (age=18-76 years) were included in the study. The incidence of postoperative nausea and vomiting was 41.4%. Age group 21-30, female gender, history of PONV, general anesthesia and intra-operative pethidine were the main predictors of PONV according to the study(10).

A study was performed using logistic regression analysis to prospectively look at factors for PONV in a small cohort of patients (n=147) in Charing Cross hospital, London(1993). The study shows that gender, previous history PONV, and post operative opioid have significant association with PONV in the first 24 hours. Subsequently, Apfel and colleagues done study on two center; Oulu, Finland (1997).n=520) and wuerzburg, German (n=2202) identified four risk factors that form the basis for the Apfel scoring system: female gender, history of PONV/motion sickness, non-smoking status, and use of postoperative opioids. Each risk factor increases the likelihood of PONV by 18–22%. Identification of baseline risk using the Apfel(2002) criteria is important, since an increase in risk factors increases the number of subsequent incidence(4).

Generally postoperative nausea and vomiting is three times more prevalent in adult females than in males, and children are around twice as susceptible as adults. Furthermore, a previous history of postoperative nausea and vomiting or motion sickness is known risk factors.

2.5 Conceptual Framework

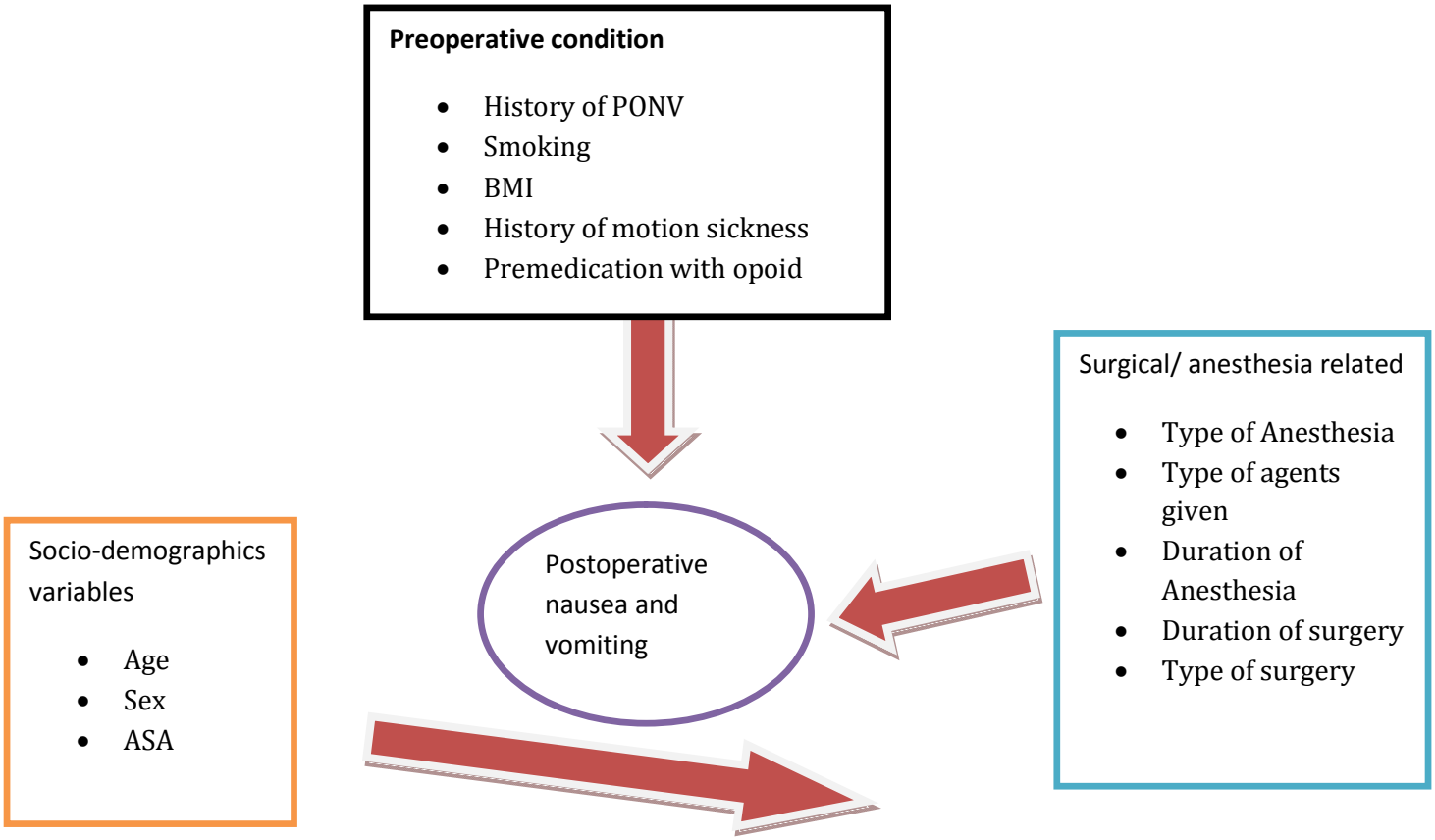

Figure 1 Conceptual framework

OBJECTIVE

3.1 GENERAL OBJECTIVE

To assess the magnitude and associated factors with post-operative nausea and vomiting in elective surgical patient under general anesthesia at TASH , January 1, 2018 –March 30,2018, Addis Ababa , Ethiopia.

3.2 SPECIFIC OBJECTIVES

- To determine magnitude of post-operative nausea and vomiting in elective surgical patient under general anesthesia.
- To identify associated factors with post-operative nausea and vomiting in elective surgical patient under general anesthesia.

4 METHOD AND MATERIALS

4.1 STUDY AREA AND PERIOD

This study was carried out at Tikur Anbesa specialized Hospital from January 1,2018- March 30,2018 G.C. TASH, which is opened in 1972, is one of largest teaching and referral hospital in the country. TASH is now the main teaching hospital for clinical and preclinical trainings of most disciplines since1998. Annually more than 6,000 people are operated for different surgical conditions in the Hospital. The hospital has 14 operation rooms which include 9 in the main operation room, 1 in obstetric unit, 4 in orthopedic department.

4.2 STUDY DESIGN

An institutional based observational cross sectional study was conducted in the elective surgical patients under general anesthesia in the first 0-24 hours after surgery.

4.3 POPULATION

- Source of population: All adult elective surgical patients scheduled for surgery under general anesthesia at Tikur Anbesa Specialized Hospital
- Study population: All adult elective surgical patients who underwent for surgery under general anesthesia at Tikur Anbesa Specialized Hospital

- **4.4Variables:**

4.4.1INDEPENDENT VARIABLES*:*

Age

Sex

BMI

ASA classification

History of PONV

History of motion skiness

Premedication with opioid

Type of opioid

History of smoking

Duration of surgery

Duration of anesthesia

Type of surgery

Type of anesthesia

Type of anesthetics agent

Total blood loss

Total fluid

*4.*4.2 Dependent variable

Post operative Nausea & Vomiting

4.5 SAMPLE SIZE AND SAMPLING TECHNIQUE

4.5.1 SAMPLE SIZE

The sample size was calculated using the single population proportion formula; from previous study done in university of Gondar, Ethiopia prevalence of postoperative nausea and vomiting of 36.2%(11).A single proportion formula with level of significance being 5%,z= confidence level at 95%(standard value of 1.96)and absolute precision or margin of error at 5%(**α=0.05)** was used to calculate using the following formula as follows:

The sample size was determined by single population proportion formula using,

$n=(Z\alpha/2)^2\, p\,(1-p)/d^{20}$

Where: n= minimum sample size required .

D= is the margin of sampling error tolerated

P= 0.362

= (1.96) 2 0.362(1-0.362) / (0.05)2 =355

Then using correction formula for finite population since source population is less than 10,000.

nf =n/(1+n/N) where n= the minimum sample size = 355

N= 400 from situational analysis (the number of surgery under general anesthesia in TASH done within three month)

355/ (1+355/400) =188

After adding 5% of non response rate the final sample size were **198**

4.5.2 SAMPLING TECHNIQUE

Systemic random sampling was used to assess the magnitude and associated risk factors of PONV. Thus study was done on 400 patients considering the situational analysis.

K (skip interval) =400/198 =2, the first participant was selected using lottery method. The first unit is selected with a random start 'r'from 1 to k sample where k=N/n sample intervals & after the selection of first sample every k^{th} unit is included

4.6 Inclusion and exclusion criteria:

4.6.1 INCLUSION CRITERIA

Patients age 18 years and above underwent surgery under general anesthesia

Patients with first 0-24 hours post-operative day

4.6.2 EXCLUSION CRITERIA:-

Pediatrics patients

Premeditated patients with ant emetics

Emergency patients

All subjects requiring admission to the intensive care unit or mechanical ventilation

Surgical patients discharged before 24 hours postoperatively were excluded

4.7 ETHICAL CONSIDERATION

Prior to data collection, ethical clearance was reviewed by the ethical committee of college of health science and medicine. Official letter for permission was requested from collage of public health and medicine, which was given to Tikur Anbesa specialized Hospital. Moreover, the objective of the study was explained to both hospital administration and patients undergo elective surgery that was included in the study to avoid ambiguity and misunderstanding. Verbal consent from the respondents was taken before study and their confidentiality was kept.

4.8 OPERATIONAL DEFINITIONS

Anesthesia: pharmacology induces loss of conscious, reflex, sensation, memory and free from pain.

The American Society of Anesthesiologists (ASA).Physical Status grading system simply to assess the degree of a patient's "sickness" or "physical state" prior to selecting the anesthetic or prior to performing

ASAI-normal health patients

ASA II-patients with mild systemic diseases

ASAIII-patients with severe systemic diseases without incapacitating normal function

ASA IV- patients with severe systemic diseases with incapacitating normal function

ASA V- Moribund patients who are not expected to survive without the operation

ASAVI- A declared brain-dead patient who organs are being removed for donor purposes

Elective surgery: is surgery done before on set (appearance) of any complication that might constitute urgent indication

Early post-operative time: early post-operative time is used starting from the time when the patient reaches to post anesthesia care unit to six hours.

Late post-operative time: time considered from six hours of patient reached to post anesthesia care unit to forty eight hours.

Minimum Alveolar Concentration: the alveolar concentration that prevents movement in 50% of patients in response to a standardized stimulus (e.g. surgical incision)

Nausea: is an unpleasant sensation associated with the urge to vomit, which is the forceful ejection of liquid or semisolid stomach contents.

Post operative nausea and vomiting: any nausea, retching or vomits occurring in the first 24 hours after surgery in patients.

Vomiting: forceful expulsion of gastric or intestinal contents through the mouth

4.9 DATA QUALITY CONTROL

During the data collection supervision of data collectors was under taken by the principal investigator throughout. Data collectors and supervisors were trained on each items included in the study tools, objective, relevant of study, right of respondents, confidentiality of information obtained. During data collection, regular supervision and follow up was made. Investigator was cross check for completeness, ambiguous suspicions, impossible variables filled and consistency of data on daily basis. Once the data had been collected and checked for completeness, consistency and accuracy, it were sorted, categorized and summarized.

4.10 Data collection

Data collection was carried out by formatted pretested questionnaire which consisting of general patient characteristics information and self designed questionnaire. It was prepared in English first and translated to the local language Amharic and again back to translation to English was made to check for consistency. The response were circled or written with pen in provided space. The data were collected in collaboration with the principal investigator and other two Bsc nurses, just after brief training on the topic and how to collect the data was given.

4.11 DATA ANALYSIS AND INTERPRETATION

Data were checked manually for completeness and then was coded and entered in to EPi-info version 7ware by investigators and exported to, then cleaning and analyzed using SPSS version 20 computer program. Descriptive statistics was used to explore the socio-demographic characteristics of patients, and the results were summarized as mean, standard deviation and relative frequencies as needed. Variables associated with magnitude rate of PONV in bivariate analyses was included in the multiple logistic models to summarize by tables and figures to

identify associated factors of postoperative nausea and vomiting and the strength of association were measured by 95% confidence interval and P- value of 0.05 was used as statistically significant in all cases.

4.12 DISSEMINATION OF RESULTS

The results of the study will be prepared in four copies and disseminated to the authority of college of health science and school of medicine/departments of anesthesia, Tikur Anbesa specialized Hospital and Addis Ababa University student research office.

5. RESULTS

5.1 SOCIO DEMOGRAPHY OF THE RESPONDENT

A total of one hundred ninety eight respondents were participated in the study. Out of one hundred ninety eight respondents of the study sixty five (32.8%) were males and one hundred thirty three (67.2 %) were females. Majority one hundreds nineteen (60.1%) of the participants were classified in ASA1 classification, followed by the ASA2 classification 76 (38.3 %) and the mean age of respondents was 42.38 years with 14.6 standard deviation, the maximum and minimum ages of respondents were 18 and 78 respectively. Regarding the motion sickness, majority one hundreds eighty five (93.4%) were have no while thirteen (6.6%) have motion sickness. One hundred nineteen (60.1%) of the respondents body mass index was between 18.5 and 24.9 whereas only five (2.5%) of them have ≥ 35 of the body mass index. (Table 1)

Table 1 Socio-demographic characteristics of patients in Tikur Anbesa Hospital, Addis Ababa, Ethiopia, 2018 (n=198).

Variables		**Frequency (%)**
Age	18-27	35 (17.7)
	28-37	37 (18.7)
	38-47	56 (28.3)
	48-57	42 (21.2)
	≥ 58	28 (14.1)
Sex	Male	65 (32.8)
	Female	133 (67.2)
Body mass index	18.5-24.9	119 (60.1)
	25-29.9	55 (27.8)
	30-34.9	19 (9.6%)
	≥ 35	5 (2.5)
ASA	ASA1	119 (60.1)
	ASA2	76 (38.3)
	ASA3	3 (1.5)
History of PONV	Yes	12 (6.1)
	NO	186 (93.9)

History of	Yes	13 (6.6)
MOTSICK	No	185 (96.4)
Premedication with	Yes	138 (69.7)
opioid	No	60 (30.3)
Type of opioid	Morphine	74 (47.4)
	Fentanyl	56 (28.3)
	Tramadol	8 (4.0)
	Not concerned	60 (30.3)
History of smoking	Yes	13 (6.6)
	No	185 (93.4)

5.2 Intra operative characteristics of patients

According to this study, more than half of patients one hundreds eighty eight (94.9%) took general anesthesia with Endotracheal tube. Among the participants eighty four (42.4%), fifty one (25.8%) were under gone abdominal surgery and gynecological surgery respectively. For more than half of the patients in this study 68.2% propofol was given during the induction while only for 4.5% of them were given ketamine (Table 2). The majority of patients (35.9%) had the duration of operation lasting for 60-90 minutes and about eighty nine patients had the duration of anesthesia lasting from 90-120 minutes. The majority of the patients were given analgesia, 61.7% morphine, 24.7% fentanyl, 4% pethidine, and 9.6% tramadol. (Table 2)

Table 2-: Intra operative characteristics of patients in Tikur Anbesa Specialized Hospital Addis Ababa, Ethiopia, 2018 (n=198).

Variables		**Frequency (%)**	**P-value**
Type of	GA with Mask	7 (3.5)	0.99
anesthesia	GA with LMA	3 (1.5)	0.99
	GA with ETT	188 (94.9)	1
Induction	Propofol	135 (68.2)	0.880
agent	Ketamine	9 (4.5)	0.426

	Thiopentone	54 (27.3)	0.96
Type of surgery	Abdomen	84 (42.4)	0.073
	Gynecology	51 (25.8)	0.636
	ENT	9 (4.5)	0.175
	Chest	8 (4)	0.999
	Urology	13 (6.6)	0.391
	Others	33 (16.7)	1
Duration of surgery	<30min	5 (2.5)	0.999
	30-60min	26 (13.1)	0.941
	60-90min	71 (35.9)	0.468
	90-120min	69 (34.8)	0.919
	>120min	27 (13.6)	1
Duration of anesthesia	30-60min	12 (6.1)	0.972
	60-90min	46 (23.2)	0.441
	90-120min	89 (44.9)	0.471
	>120min	51 (25.8)	1
Total blood loss	<250ml	85 (42.9)	0.999
	250-500ml	62 (31.3)	0.998
	500-750ml	28 (14.1)	0.9989
	750-1000ml	9 (4.5)	0.998
	>1250ml	14(7.1)	1
Total fluid given intra operative	<250ml	9 (4.5)	0.999
	250-500ml	16 (8.1)	0.433
	500-1000ml	60 (30.3)	0.998
	1000-2000ml	84 (42.4)	0.541
	>2000ml	29 (14.6)	1
Intra operative given analgesia	Morphine 3mg	52 (26.3)	0.880
	Morphine 5mg	70 (35.4)	0.426
	Fentanyl50mg	40 (20.2)	0.960
	Fentanyl100mg	9 (4.5)	0.482
	Tramadol50mg	6(3)	1

	Tramadol100mg	13 (6.6)	0.523
	Pethidine 25mg	2 (1)	0.999
	Pethidine 50mg	6 (3)	1

5.3 POST-OPERATIVE CHARACTERISTICS OF PATIENTS

In relation to nausea occurrence twenty (10.1%) of patients developed in PACU, twenty four (12.1%) occurred in ward within 24 hours after surgery. Regarding to the vomiting, 13 (6.6%) and 12 (6.1%) of the study participants developed vomiting in PACU and Ward respectively (Table 3)

Table 3 Post-operative characteristics of patients in Tikur Anbesa Specialized Hospital (TASH), Addis Ababa, Ethiopia, 2018 (n=198).

Variables		Frequency (%)
Occurrence of Nausea in PACU	Yes	20 (10.1)
	No	178 (89.9)
Occurrence of vomiting in PACU	Yes	13 (6.6)
	No	185 (93.4)
Occurrence of nausea in ward	Yes	24 (12.1)
	No	174 (87.9)
Occurrence of vomiting in ward	Yes	12 (6.1)
	No	186 (93.9)
Occurrence period of post-operative nausea	Early 6hrs	29 (60.4)
	6-24hrs	15 (39.5)
Occurrence period of post-operative vomiting	Early 6hrs	19(70.37)
	6-24hrs	8 (29.6)

5.4 Over all nausea and vomiting

To compute the overall nausea and vomiting the occurrence of the two events were summed up both in PACU and Ward. According to the result 22.7% of patients do have nausea and 15.7% of patients do have vomiting which occurred among the patients under gone general anesthesia within 24 hours after surgery (Fig 1).

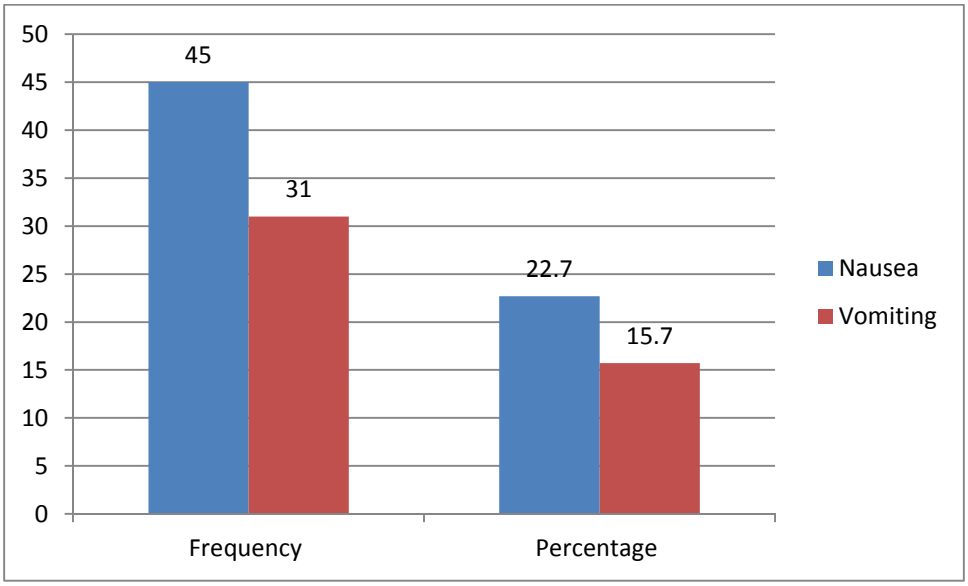

Figure 2 over all nausea and vomiting occurrence in Black lion Hospital, Addis Ababa, Ethiopia, 2018 (n=198).

5.5 BIVARIATE AND MULTIVARIATE LOGISTIC REGRESSION ANALYSIS OF POST-OPERATIVE VOMITING AND CONTRIBUTING FACTORS AT BLACK LION HOSPITAL

The binary logistic regression analysis gave out sex, body mass index, Pre medication with opioid and type of opioid were associated with occurrence of vomiting.

In a multiple logistic regression analysis it was found that female patients those undergone general anesthesia were 3.3times **{AOR=3.3; 95% CI (1.1-10.1)}** more likely to have vomiting compared to male patients those undergone general anesthesia

From Patients who were took general anesthesia, those who have body mass index between 25 and 29.9 were 32%times **{AOR=0.32; 95% CI (0.1-0.99)}** more likely to have vomiting compared to patients those have body mass index between 18.5 and 24.9.

Patients those pre medication with opioid were 3.4 times **{AOR=3.4; 95% CI (1.032-12.36}** more likely to have vomiting compared to patients those pre medication with opioid was not given. Specifically Patients who took morphine as premedication were3.6 times **{AOR=3.6; 95% CI (1.17-11.2)}** more likely to have vomiting compared to patients those any Pre medication with opioid was not given.

In multi logistic regression female patients those undergone general anesthesia were 3.3 times **{AOR=3.3; 95% CI (1.1, 10.1)** more likely to have vomiting compared to male patients those undergone general anesthesia.(Table 4).

Table 4 **Factors associated with occurrence of vomiting among patients at TASH Addis Ababa, Ethiopia, 2018 (n=198).**

Variables		**COR, 95%CI**	**AOR, 95%CI**	**P value**
Sex	Male	1	1	
	Female	**0.25 (0.02. 0.8)**	**3.3 (1.1, 10.1)**	0.03*
Body mass index	18.5-24.9	1	1	
	25-29.9	**0.210 (0.12, 0.44)**	0.32 (0.140, 0.99)	0.05*
	30-34.9	0.23 (0.02, 1.82)	0.143 (0.017, 1.190)	0.21
	≥ 35	-	-	-
Pre medication	Yes	**1.21(0.011,0.98)**	**3.4 (1.032, 12.36)**	0.044*
with opioid	No	**1**	1	
Type of opioid	Morphine	**1.3(0.021, 0.76)**	3. 6(1.170, 11.256)	0.023*
given	Fentanyl	0.6 (0.22, 1.58)	0.264 (0.22, 3.102)	0.97
	Tramadol	0.51 (0.05, 4.58)	-	-
	Not concerned	1	1	

5.5 BIVARIATE AND MULTIVARIATE LOGISTIC REGRESSION ANALYSIS OF POST-OPERATIVE NAUSEA AND CONTRIBUTING FACTORS AT TASH

Bivariate and multivariate analysis was performed between occurrence of nausea (dependent variable) and factors (independent variable). Binary Logistic regression was performed to assess the association of each independent variable with occurrence of nausea. The factors that showed association were added to multivariate regression model.

In the multi logistic regression, female patients those undergone general anesthesia were 2.35times **{AOR=2.35; 95% CI (1.017-5.43)}** more likely to have nausea compared to male patients those undergone general anesthesia.

In multi logistic regression, Patients those have history of previous nausea or vomiting were 4.25 times **{AOR=4.25; 95% CI (1.32-13.6)** more likely to have nausea compared to patients those have no history of previous nausea or vomiting (Table 5)

Table 5: Factors associated with occurrence of nausea among patients in TASH, Addis Ababa, Ethiopia, 2018 (n=198).

Table 5

Variables		COR, 95%CI	AOR, 95%CI	P value
Sex	Male	1	1	
	Female	**1.02 (0.017,05.436)**	2.35 (1.017, 5.436)	0.046*
Body mass index	18.5-24.9	1.4 (0.15,13.09)	1.65 (0.12, 21.5)	0.83
	25-29.9	0.78 (0.07,7.84)	0.62 (0.04, 8.87)	0.64
	30-34.9	0.75, (0.06, 9.27)	0.74 (0.04, 12.6)	0.58
	≥ 35	1	1	
History of previous nausea or vomiting	Yes	**3.98(1.431,11.104)**	**4.25 (1.32, 13.6)**	0.008*
	No	1	1	
History of motion sickness	Yes	0.61 (0.13, 2.9)	0.15 (0.01, 1.47)	0.54
	No	1	1	
Pre medication		0.61 (0.30, 1.24)	2.01 (0.81, 4.98)	0.33

with opioid	1

6. DISCUSSIONS

This facility based cross sectional study has attempted to assess the Magnitude and associated factors of post-operative nausea and vomiting in elective surgical patient under general anesthesia in TASH, Addis Ababa, Ethiopia.

The study found that the magnitude of nausea and vomiting among patients who had taken general anesthesia was nausea and vomiting22.7% and 15.7% respectively. Magnitude of nausea and vomiting documented in this study finding was consistent with the findings in University of Gondar (36.2%). This finding was high compared with previous studies conducted in Nigeria (4%), Czech Republic (15.5%) (16) and South Africa (27%). This high difference in magnitude may be due to differences in surgery and anesthesia techniques.

In the regression model the factors that were significantly associated with vomiting was sex. Being female by sex {AOR=**3.3,** 95% CI**(1.1, 10.1)**} was significantly associated with magnitude of vomiting. This might be because of hormonal effects like progesterone which have emetogenic effects. This finding was consistent with the finding in Czech Republic where the overall incidence was affecting more women compared to men and also the same with the findings reported in Uganda where female patients were more vulnerable to vomiting and nausea compared to male patients {AOR=2.7; CI (1.45-5.01)} (16)(25).According to the Apfel's predictive model, female sex was among the main predictive factors for post-operative nausea and vomiting. However sex had no association with PONV in Gondar study (11)

Concerning to the previous history of post-operative nausea and vomiting a significant association with postoperative nausea (PON) was reported. Patients those have history of previous nausea or vomiting were 4.25 times {AOR=4.25; 95% CI (1.32-13.6) more likely to have nausea compared to patients those have no history of previous nausea or vomiting. This finding was in agreement with studies in University of Gondar where there is an association with Previous history of PONV (p=.0.002 and p=0.001), Patients with previous history of postoperative nausea and vomiting were four times more likely to develop nausea and vomiting than their counter parts (11).

In our study duration of surgery greater than 60 minute where not significant with (p = 0.469), in contrast to our study the study done in University of Gondar shows that duration of surgery (more than one hour) was one of the main predictive factors for postoperative nausea a (p=0.001) and vomiting a (p=0.001) (11). The reason for this could be usage of propofol induction for majority of patients which has an antiemetic and numbers of participants.

Regarding to type of anesthesia, patients those took General anesthesia with Endo-tracheal intubation were around 95%. This finding was the same with findings which was reported among patients have got surgery under general anesthesia in Uganda where Endo-tracheal intubation was done in 95.6% of the study patients (25).

Patients those pre medication with opioid were **3.4 {AOR=3.4; 95% CI (1.032, 12.36)** more likely to have vomiting compared to patients those didn't take pre medication with opioid. Specifically Patients who took morphine as premedication were 3.6 times **{AOR=3.6; 95% CI (1.17-11.2)}** more likely to have vomiting compared to patients those any Pre medication with opioid. This finding was similar to the study done in Malawi (24). These may due to the effects of opioids have the chance to increase occurrence of vomiting and nausea. Opioid directly stimulates the CTZ and vestibular apparatus, and also decreases motility of the gut.

7. Strengths and limitation of the study

7.1 Strengths

- This study is the first study that attempted to assess magnitude of post-operative nausea and vomiting among patients took general anesthesia in TASH
- Found base line information for future health plan.
- Can be used as base line data for future study.

7.2 Limitation

- Since the study design is cross sectional it cannot revealed cause effect

8 CONCULATION AND RECOMONDATION

8.1 Conclusion

The overall magnitude of vomiting and nausea in the study area were 15.7% and 22.7% respectively. Variables like sex, pre medication with opioid and history of previous nausea or vomiting had significantly associated with magnitude of nausea and vomiting. It is recommended to give premedication for patients who take opioids before surgery.

8.2 Recommendation

- It is advised Anesthesia professional to give other opioids rather than morphine
- In pre-anesthetic assessment previous history of postoperative nausea and vomiting and being female should be considered
- Other clinical trials should be conducted by involving large sample size to identify the other factors that can aggravate the nausea and vomiting.

REFERENCES

1. ACaR. N. Risk assessment of postoperative nausea and vomiting. . Anesthesiology Clin. 2003;41(1332).
2. StadlerM BF SL. Difference in risk factors for postoperative nausea and vomiting. . Anesthesiology Clin. 2003;98:46-52.
3. Murphy MJ HV SE. Identification of risk factors for postoperative nausea and vomiting in the perianesthesia adult patient. J Perianesth Nurs. 2006;21:377–84.
4. Apfel CC KP, Katz MH, Goepfert C, Papenfuss T, Rauch S, Heineck R, Greim CA, Roewer N. Volatile anaesthetics may be the main cause of early but not delayed postoperative vomiting: a randomized controlled trial of factorial design. . British Journal of Anaesthesia. may1, 2002;188(5):659-68.
5. Andria ML AJ, Bolinger AM, Briones GR, Chen JJ, Chin A, Coursin DB, Diener KM, Dranitsaris G, Farrington J, Frazier JL. ASHP. ASHP therapeutic guidelines on the pharmacologic management of nausea and vomiting in adult and pediatric patients receiving chemotherapy or radiation therapy or undergoing surgery. . American Journal of Health-System Pharmacy. 1999;56(8):729-64.
6. Pierre S WR. Nausea and vomiting after surgery. . Continuing Education in Anaesthesia, Critical Care & Pain. August 11,2012;13(1):28-32.
7. TJ. G. Guidelines for the Management of PONV. 2012;13(3):122-30.
8. Rüsch D EL, Wallenborn J, Kranke P. Nausea and vomiting after surgery under general anesthesia: an evidence-based review concerning risk assessment, prevention, and treatment. . Deutsches Ärzteblatt International. Oct.2010;107(42):733.
9. Doubravska L DK, Fritscherova S, Zapletalova J, Adamus M. Incidence of postoperative nausea and vomiting in patients at a university hospital. Where are we today. . Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub. Mar.2010;154(1):69-76.
10. Chalya PL MO, Mabula JB. . Postoperative nausea and vomiting at a tertiary care hospital in north-western Tanzania. Tanzania Journal of Health Research. 2015;17(3).
11. Endale G/Eg JH, Danielle R, Tadesse Belayneh M,. prevalence and factors associated with postoperative nausea and vomiting at the university of gondar teaching hospital, northwest ethiopia. Ethiop J Health Biomed Sci. 2012;6(1).

12. Apfel CC LE, Koivuranta M, Greim CA, Roewer N. A simplified risk score for predicting postoperative nausea and vomiting: conclusions from cross validations between two centers. Anesthesiology. 1999;91:693–700.

13. K. A. Prevention and Treatment of Postoperative Nausea and Vomiting. Drugs. Drugs. 2000;59:213-43.

14. R e v i e w A r t i c l e. Postoperative Nausea and Vomiting: a Review of Current Literature. ingapore Med J. 2003;144(7):366-74.

15. REVIEW ARTICLE. Nausea and Vomiting After Surgery Under General Anesthesia. . Deutsches Ärzteblatt International | Dtsch Arztebl In. 2010;107(42):733-41.

16. Watcha B, Bras, P., Cieslak, G., & Pennett, J. The dose-response relationship of odansetron in preventing postoperative emesis in pediatric patients undergoing ambulatory surgery. Anesthesiology. 1995; 82: 47-52.

17. M.koivuranta EL, L.snare and S.Alahunta. Asurvey of potoperative nausea and vomiting. Anaesthesia,. 1997;52(443-49).

18. PHILLIPO L. CHALYA OZMaJBM. Catholic University of Health and Allied Sciences-Bugando, Mwanza, TanzaniPostoperative nausea and vomiting at a tertiary care hospital in northwestern Tanzania. . aTanzania Journal of Health Research. July,2015;17(3).

19. M.Koivuranta EL LS, S.Alahuhta. . survey of postoperative nausea and vomiting. anaesthesia. . 1997;52(443-50).

20. Bellville JW BI HW. Postoperative nausea and vomiting. IV. Factors related to postoperative nausea and vomiting. . Anesthesiology Clin. 1990;21:198-93.

21. Sinclair DR CF MG. Can postoperative nausea and vomiting be predicted? . Anesthesiology Clin. 2010;91(109-18).

22. ER. PM. Logistic regression analysis of fixed patient factors for postoperative sickness: a model for risk assessment. Br J Anaesth. 1993;70:135–40.

23. Eberhart LH GG KP. The development and validation of a risk score to predict the probability of postoperative vomiting in pediatric patients. Anesth andAnalg. 2004;99:1630-37.

24. R. Ssebuufu K, M. Okello. Post-operative Nausea and Vomiting at Mulago Hospital. East and Central African Journal of Surgery 14(2):5.

ANNEXES

Annex I: Information Sheet Title of the Research Project magnitude of nausea and vomiting and its associated factors among patients under gone for general anesthesia at TASH, Addis Ababa, Ethiopia

Name of Principal Investigator Chali Tolosa (BSc inAnesthesia)

Name of advisors: Mr.Eyayalem melese(MSc,Lecturer)

Name of the Organization: Addis Ababa University, College of Medicine and Health Sciences, Department of Anesthesia

Name of the Sponsor:AddisAbabaUniversity

Introduction:

This information sheet is prepared with the aim of assessing magnitude and associated risk factors

of PONV elective surgical patients under

general anesthesia in TASH. The research group includes the principal investigator two data collectors, and one advisor.

Purpose of the Research Project

The aim of this study was to assess magnitude and associated risk factors of nausea and vomiting following elective surgical patient under general anesthesia in TASH. Assessing the magnitude and associated risk factors for nausea and vomiting in patients during Elective surgical under general anesthesia. The results of this study will be used to

design appropriate intervention programs to reduce the occurrence of PONV in TASH, as well as in other health institutions in Ethiopia.

Person to contact

For any questions or concerns can contact the principal investigator using the following addresses:

Name:ChaliTolosa

Telephone:+25194595795

E-mail:chalimsc2017@gmail.com

AnnexII:English-Questionnaire

This questionnaire was used as a guide to collect information for the data collectors. Questionnaires to assess magnitude and associated risk factors of postoperative nausea and vomiting during elective surgical under general anesthesia in TASH,AddisAbaba,Ethiopia. Hello! My name is ----------I am one of the members of the research team. The purpose of this questionnaire is to gather information on magnitude and associated risk factors of post-operative nausea and vomiting during elective surgical procedure under general anesthesia in TASH. I have identified you as a study participant hoping that you would be willing to help me by providing some information. I have some questions, which I would like to ask you, if you have the time and are willing. Your participation is definitely important to assess the Incidence and associated risk factors for nausea and vomiting following elective surgical under anesthesia in TASH. All information you provide will be kept confidential. I will not include any identifiers, such as your name or exact address. Only honest answers would contribute to improvement of health planning. Your role in the success of the research is important and I appreciate your contribution to the research. Would this be okay with you?
I understood about the advantage of the research and the roles I will have in the research. I have agreedtoparticipateintheresearch.

A, agree B.disagree

If Respondent agrees to be interviewed; the interview will be started

Questionnaire:Code_____

Startingtime_____finishingtime_____

Dateofdatacollection_____

Name of data collector _____signature____

Annex– III: Amharic Version Questionnaire Consent Form

ጤናይስጥልኝ፡ ስሜ … ይባሊል፡፡
በአዲስአበባዩኒቨርሲቲአንስቴዝያትምህርትክፍልየምርምርቡድንውስጥእየሰራሁእገኛለሁ፡፡
ወደዚህየመጣሁበትምክንያትበቀዶህክምናወቅትየሚሰጥሙለአኔስቴዥዮያንተከትሎሊከሰትስለ
ሚችልየማቅለሽለሽእናትውከትመጠንለሚደረገውምርምር /ጥናትመረጃለመሰብሰብነው፡፡
ጥናቱንየሚያካሂዱትበአዲስአበባዩኒቨርስቲአኔስቴዝያ
ት/ክፍልየሁለተኛድግሪተማሪየሆኑትጫሊቶሎሳናቸው፡፡

ስለዚህከአስርእስከሀያደቂቃየሚሆንጊዜየሚወስዱጥያቄዎችአለኝ፡፡
የርስዎጥያቄዎችንመመለስሙለአኔስቴዥያተሰጥተዎትቀዶህክምናሲሰራሊከሰትስለሚችልማ
ቅለሽለሽእናትውከትለመቀነስናለመከላከልከፍተኛየሆነአስተዋፅዎይኖረዋል፡፡
ከዚህየሚናገኘውማንኛውምመረጃበሚስጥርይጠበቃል፡፡ ለዚህምሲባልየርስዎስምአይፃፍም፡፡
ለመመለስፈቃደኛያልሆኑትንማንኛውምጥያቄአለመመለስምይችላሉ፡፡
በማንኛውምስዓትየጥያቄናመልሱንሂደትማቋረጥይችላሉ፡፡
ነገርግንቀደምሲልእንደተገለፀውእርስዎየሚሰጡትእዉነተኛምሊሽለቀዶህክምናየሚሰጥሙለአ
ኔስቴዥያንተከትሎሊከሰትስለሚችልየማቅለሽለሽእናትውከትለመቀነስናለመከላከልለሚደረገ
ዉምርምር / ጥናትበከፍተኛሁኔታያግዛል፡፡

የቃልስምምነት

የዚህጥናትዓሊማተነቦልኝ (አንብቤው) እናአላማውገብቶኝበጥናቱለመሳተፍ

ሀ. ፈቃደኛሆኛለሁ---------- (ቃለመጠይቁንመቀጠልይችሊለ)

ለ. ፈቃደኛአይደለሁም……..(ቃለመጠይቁንያቁሙ)

ፈቃደኛከሆኑ
የጥያቄውመለያቁጥር …….. መጠይቁየሚካሂድበትቀን----------
የተጀመረበትስአት……
የጠያቂውስምናፊርማ---------- ----------
የሱፐርቫይዘርስምናፊርማ---------- ----------

QUESTIONNAIRE III

Instruction: read the following sentences carefully, observe and review cards or asking patients if needed write or tick the response on the space provided (additional information can be referred from the card or an aesthesia note)

Part I Socio-demographic and preoperative characteristics of patients at TASH, Addis Ababa, Ethiopia from January 1, 2018-March 30, 2018G.C.

101, age	**_____ completed year**
102, sex	1. male 2. female
103, BMI = weight/height^2	……..
104 , ASA	1. ASAI 2. ASAII 3. ASAIII 4. ASA IV 5. ASA V
105, Did He/she have history of previous post operative nausea and vomiting?	1. Yes 2. No
106, Did He/she have history of motion sickness?	1. Yes 2. No
107, Is He/she premeditated with opioid?	1. Yes, if yes medication_____ 2. No
108. Does He/she smoke?	1. Yes 2. No

Part II Intraoperative and postoperative characteristics of patients operated at TASH in Addis Ababa, Ethiopia, January 1 -March 30, 2018.

201, **Type of Anesthesia**	**1. GA WITH Mask** **2. GA with LMA** **3. GA with ETT**
202, **Induction agent**	1. Propofol 2. Ketamine 3. Thiopetone 4. other specify----
203,Type of surgery	1. Abdominal surgery 2. Gynecological 3. Urology 4. Chest 5. ENT 6. Other specify--------
204, Duration of surgery	1. >60min 2. <60min
205,Duration of Anesthesia	1. <60min 2. >60min
206. total amount of blood loss during surgery in ml	…….
207. total Intraoperative fluid given during operation in ml	……
208. Intraoperative given analgesia	……..mg

Part III postoperative characteristics of patients operated at TASH, Addis Ababa, Ethiopia,January 1, -March 30,2018G.C.

301.Does He / She develop post operative nausea	**IN PACU** 1. yes 2. No	**IN ward** 1. Yes 2. no
302. Does He / She develop post operative vomiting	1 yes 2 no	1 yes 2 no
302. occurrence period of post operative nausea in ward	1. Occur early post operative period (first 6 hours) 2. Occur late post operative period	
303. occurrence period of post operative vomiting in ward	1. Occur early post operative period (first 6 hours) 2. Occur late post operative period	
304. total postoperative fluid given in ml	……ml	
305. postoperative given analgesia in PACU	……mg	
306. postoperative given analgesia in Ward	…….mg	