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St. Paul's Hospital Millennium Medical College

**MAGNITUDE AND FACTORS ASSOCIATED WITH EARLY RECOVERY IN POST
SURGICAL PATIENTS IN SPHMMC SURGICAL WARDS**

BY ELIZABETH GEBRE

**ADVISORS- DR MAHTEME BEKELE ASSOCIATE PROFESSOR OF SURGERY
MR. TESFALEM TESHOME MPH**

**A RESEARCH SUBMITTED TO THE DEPARTMENT OF PUBLIC
FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE OF MEDICINE.**

OCTOBER 2017



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ACRONYMS

CCP	Conventional care protocol
ERAS	Enhanced recovery after surgery
ERP	Enhanced recovery protocol
FMOH	Federal ministry of health
ICU	Intensive care unit
NPO	Nothing per mouth
PONV	Postoperative nausea and vomiting
PRN	Pro re nata meaning as needed
SPHMMC	St Paul hospital millennium medical college

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Abstract

Introduction – Early recovery from any type of surgery is going to a stable functional status after operation. It encompasses faster recovery after surgery. There are many factors attributing to faster recovery for instance

Hospitals are starting to abandon the time-honored drill for surgery patients—including fasting, heavy IV fluids, powerful post-op narcotics and bed rest—amid growing evidence that the lack of nutrients, fluid overload and drug side effects can do more harm than good. So they are starting to use Enhanced recovery after surgery protocols.

Objective – To know describe the magnitude and factors associated with early recovery in post surgical patients in St Paul hospital millennium medical college. To describe the factors that affect early recovery in post surgical patients in St Paul hospital millennium medical college.

Methods - Cross-sectional study was conducted among St Paul's hospital post surgical patients in Addis Ababa. Quantitative data about socio demographic, environment factors and behavioral factors about patients was collected through Interviewer-administered structured questionnaire. The collected data was entered and analyzed using SPSS 20.

Result- There were 384 responders and only 59 (15.4%) of the patients recovered early. With multivariable regression age, information about early recovery and ethnicity were associated with early recovery in post surgical patients.

Conclusion - There were more males, Oromo ethnicity, with no education and no jobs and married from 384 patients. Patients diagnosis was non emergency, had other diagnosis mostly, and most of the patients had no comorbid illness. Most of the patients do not receive nausea prophylaxis, and receive anti- pain medication twice daily mostly and ambulate on the third day. Early recovery is low in St Paul's hospital.

1 Introduction

1.1 Background

Early recovery is when a patient is able to do its daily routine activity in the possible shortest amount of time. With early recovery patient's morbidity is decreased and length of hospital stay (1) it takes a longer period of time for some patients to go back to their routine activity.

One factor that plays major role perioperative outcome. By modifying the stress response with perioperative interventions such as early aggressive resuscitation, closure of wounds and restoring normal anatomy, draining pockets of infection and early appropriate antibiotics, providing cardiovascular, respiratory, metabolic and nutritional support we can improve outcome of patients (2). Modulation of the surgical stress response can improve postoperative outcomes and this can reduce postoperative morbidity and mortality. This was the impetus for change in the traditional perioperative care of patients.

Traditional postoperative surgical care emphasizes prolonged bed rest for the patient and bowel rest for the gastrointestinal tract with acceptance of the surgical stress response. The Enhanced Recovery After Surgery concept aims to eliminate the surgical stress response through the application of optimal perioperative anesthetic, analgesic and metabolic support. The focus is to maintain the patients preoperative state and promote enhanced recovery and return of function. This aims to enable patients to recover from major abdominal surgery faster, while avoiding postoperative complications and reducing healthcare costs by reducing the length of stay (3).

Enhanced recovery after surgery (ERAS) or enhanced recovery protocols (ERP) is a concept first described by Henrik Kehlet in the early 1990's (4). The approach employs a multimodal peri-operative care pathway designed to attenuate the surgical stress response and accelerate post-operative recovery (5). Implementation of ERPs across a range of surgical disciplines has led to improved patient outcomes including reductions in post-operative complications and hospital length of stay.

Trauma centres in developing countries constantly battle with reduced bed availability and restricted health care budgets. Optimization of health care practice is therefore urgent, particularly in trauma surgery. Since its introduction 24 years ago, enhanced recovery after surgery (ERAS) protocols have been successfully used in elective gastrointestinal surgery (colorectal, hepatobiliary and gastric), and, there has been widespread acceptance and implementation in other surgical disciplines too (urology, vascular, thoracic and orthopaedics) (6,7). The benefits of ERAS/ERPs are well established. They have shown faster physiological patient recovery, and reduced length of hospital stay without an increase in complications (8,9).

The new protocol enhanced recovery after surgery delineates that it is not the post operative state that totally estimates the out come, but also the perioperative nutritional status, preoperative counseling, and intraoperative meticulousness of maintaining perioperative organ function and reduction of profound stress response (10). The ERP included: early nasogastric tube removal, early urine catheter removal, early intravenous line removal, early feeding with early fluid and solid diet initiation, early mobilization/physiotherapy, and early optimal oral analgesia. Criteria for early discharge included: tolerance of solid diet, pain control on oral analgesia and independent mobilization.

In many countries ERAS is being practiced and from our continent south Africa, is using enhanced recovery after surgery. Early recovery after surgery decreases morbidity, increases patient turnover and get more beds in ICU, and decrease post operative complications.(11)

There is no protocol in Ethiopia currently. there is a research done in Gondor about the effect of Hypothermia in post surgical patients. Maintaining normal body temperature will reduce hospital stay, surgical site infection, postoperative blood transfusions, pressure ulcers, subjective discomfort and mortality. The aim of this study was to identify magnitude and factors associated with postoperative hypothermia. The incidence of postoperative hypothermia at Recovery Room was 30.72%. Of these, 30 (27.96%) and 43 (34.44%) were mild and moderate respectively, with no severe hypothermia. Surgical patient operated under general anesthesia was more likely to develop postoperative hypothermia than spinal anesthesia. (12)

In st Paul, the conventional way of early recovery is; pain management, early ambulation after 18-24 hrs and after surgery, starting sips as early as 24 hrs or as soon as they have passed feces and flatus. The use of adequate analgesia is beneficial post surgery, in St paul's hospital it is a standard to provide Tramadol 50mg IV/IM T.I.D Or Diclofenac 75mg IM PRN. This is beneficial for early recovery but it is not enough. There should be preoperative and postoperative counseling about what any patient should and not should do after a surgery. There should be a standardized new protocol as Australia, New Zealand, India, South Africa and other countries. The new enhanced recovery after surgery has benefited most of the countries.

1.2 Statement of the problem

Early recovery in a hospital like St Paul is not attained for every one. The magnitude of the problem has not been identified, and also the factors are also vast. When patients do not recover fast there is prolonged hospital stay, and further postoperative complication like hospital acquired pneumonia, deep vein thrombosis, urinary tract infections, wound site infection, and increased morbidity and mortality. It would be more detrimental for other patients to be treated since they would not get discharged early.

In a study done in south Africa prolonged recovery has caused increased health costs, shortage of beds especially ICU, prolonged waiting time for operation, and increased pressure to discharge patients early, and delay to return to work. (13)

1.3 Literature review

There is a great deal of study about enhanced recovery after surgery, which is a new way of improving the experience of patients who need major surgery. It helps patients recover sooner so that life can return to normal. It has 4 major parts, which are planning and preparing before surgery, reducing the stress of operation by allowing to drink a lot of water 2 hours before surgery, a pain relief pain and early feeding and moving around after surgery. (3) This ERAS has been practiced since 1990s by Professor Henrik Kehlet and popularized in the 21st century. (2) It decreases pain, early postoperative recovery, reduction in morbidity and mortality and shortened hospital stay and early return to normal activities. The main role players are the patients, anesthetics, surgeons, nurses and hospital managers and administrators. The role of the anesthetist is to provide preoperative medication, choosing the right anesthesia drug, prophylactic drugs to decrease vomiting and nausea and also the post operative pain, nausea and vomiting management. (2)

ERAS have become an important focus of perioperative management after colorectal surgery, vascular surgery, thoracic surgery and more recently radical cystectomy. The key principles of the ERAS protocol include pre-operative counseling, preoperative nutrition, avoidance of perioperative fasting and carbohydrate loading up to 2 hours preoperatively, standardized anesthetic and analgesic regimens (epidural and non-opioid analgesia) and early mobilization (4). In preoperative counseling patients are told about enhanced recovery protocol, to stop alcohol and cigarette smoking, to know when to stop solid foods and when to stop liquids. And also to know if the patients have any comorbid illness, and patients consent is taken before surgery. In ERAS mechanical bowel preparation for colorectal surgery and any other bowel surgery is avoided because there is no benefit of bacterial load by applying mechanical bowel preparation rather the liquefied stool can spill into the bowel during surgical procedure (11). The mechanical bowel preparation causes dehydration, abdominal pain, bloating, fatigue and metabolic and electrolyte imbalance (11). And pre operatively patients are given antibiotics just before surgery

to decrease the bacterial load. Patients are kept NPO only for 2 hours and can feed up to 6 hours before surgery solid foods and 2 hours before surgery liquid carbohydrate drinks. This is to decrease the surgical stress response that is initiated once there is tissue injury as in surgery once there is incision any where in the body, this initiates a catabolic state that causes glycogenolysis, release of fatty acids release and muscle break down since there is cortisol release from Adeno corticotrophin hormone that increases alpha 2 adrenergic inhibition of insulin and causes insulin resistance that causes hyperglycemia which cause delayed wound healing. For this reason the ERAS eliminated the surgical stress response by giving carbohydrate drink till two hour before surgery (11).

Intraoperative patients get adequate analgesia by epidural in adjuvant with spinal or general anesthesia this reduced post operative paralytic ileus and increases return of function of the bowel early (14). By avoiding invasive lines patients are having decreased complication (2).

Post operatively patients have standing dose of analgesia, after the epidural analgesia is discontinued is patient tolerated oral medication patient would continue used oral analgesia. Patients are encouraged to ambulate and feed early. And if there were any invasive lines it would be removed early.

After the surgery it is ensured a 30-day follow-up including a phone call at 48 hours and a 7th day Clinic visit also patients are allowed to have an emergency visit.

Table 1. A Summary of Enhanced Recovery After Surgery (ERAS) Protocol comparing with conventional care protocol

Period	Enhanced Recovery Protocol (ERP)	Conventional care Protocol (CCP) (key differences only)
Pre-operative	• Provide complete information about the protocol and take an informed consent • Advice given regarding exercise, smoking and alcohol cessation • Optimize any pre-existing co-morbidity • Minimal starvation (6 hrs for solids and 2 hrs for liquids)	• Overnight starvation • No carbohydrate drink • Mechanical bowel preparation • Parenteral hydration (to compensate for bowel preparation)

	• 100g oral carbohydrate drink • Avoid mechanical bowel preparation • Pre-operative antibiotic	
Operative	• Epidural anaesthesia (0.125% bupivacaine, continuous infusion) along with spinal or general anaesthesia • Arterial/Central lines inserted only if unavoidable • Maintain optimal oxygenation • Avoid hypothermia • Minimal tissue handling • Elective use of nasogastric tubes, abdominal drains and urinary catheters	• Done under spinal or general anaesthesia • Routine use of Nasogastric tubes, abdominal drain and urinary catheter • Liberal hydration
Post-operative	• Maintain supplemental oxygen • Strict post-operative nausea and vomiting prophylaxis • Early enforced mobilization • Early enteral nutrition • Removal of epidural catheter by day 2 • Ensuring adequate analgesia after epidural catheter removal • Early removal of all tubes, drains and catheters	• No emphasis on PONV prophylaxis • No enforced mobilization • Removal of nasogastric tube and abdominal drain delayed till markers of bowel motility are observed • Oral or Enteral nutrition given once bowel motility is restored
Post-discharge	• Ensure 30-day follow-up including: ○ Phone call at 48 hours ○ 7th day Clinic visit ○ Any Emergency visit	• Patient follows up on day 7 in the clinic or else as and when required

This is practiced in South Africa and other western countries it is decreasing the prolonged hospital stay to from 2.61 to 0.5 days (4)

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Most surgeons in new Zealand and Australia use the principle for early recovery by understanding patients education, no bowel preparation, less use of drains and nasogastric tubes, early removal of catheters, maximizing analgesic requirements and early mobilization and feeding, (4)

Fig1 showing list of countries using ERAS protocol



In India there is reduction of length of hospital stay 35-40 % by applying enhanced recovery after surgery. It has been associated with earlier return to work and better quality of life. In previous times ERAS has been used in elective colorectal surgery only but now it is being used for upper gastrointestinal surgeries, hepatobiliary and pancreatic surgeries, and cardiovascular, orthopedics and gynecologic surgeries. In previous times only young and middle-aged populations benefited but currently elderly are also achieving success in the program. (5).

On this research , the variables investigated were in early recovery in post surgical patients are diagnosis of the patient, the condition of the surgery if it was emergency based, the comorbid illness, the hours or days patients stayed NPO, the duration of post operative stay , If patients develop complication, if patients received nausea prophylaxis , anti pain medication received frequency and sociodemographic factors.

1.4 Significance of the study

After studying the magnitude and factors associated with early recovery in post surgical patients in SPHMMC it would identify the problems causing delayed recovery and the importance of using Enhanced recovery after surgery protocol in our country and hospital. It would be easier for patients to go back to their routine activity and decrease post operative complications from prolonged stay.

In St Paul hospital a teaching and a tertiary hospital the number of patients referred from health centers is many it would be a great benefit if we can increase patients turn over by increasing early recovery in post surgical patients.

2 Objectives

2.1 General objectives

- Magnitude and factors associated with early recovery in post surgical patients in SPHMMC in 2017.

2.2 Specific objectives

- To determine the magnitude of early recovery in post surgical patients in 2017.
- To determine which factors are associated with early recovery in post surgical patients in SPHMMC.

3 Methods

3.1 Study area

The study would be conducted in st Paul millennium medical college Addis Ababa. It is a referral hospital in Addis Ababa under the federal ministry of health(FMOH). It is the second largest public hospital in the nation, built by the Emperor Haile Selassie in 1961 with the help of German Evangelical church. The hospital was established to serve the economically under privileged population, providing services free of charge to about 75% of its patients. In 2007 it became a medical college and its core services include the provision of medical care, teaching and research. In st Paul estimated 110,000 people annually who are referred from all over the country.

3.2 Study Design

The study design is hospital based cross-sectional study in St Paul's hospital.

3.3 Source and study population

3.3.1 Source population

Patients that are being treated in St Paul's hospital surgical wards.

3.3.2 Study population

Patients who had surgery a day – 2 weeks back in St Paul's hospital. Most patients do not stay more than two weeks unless they developed complication. Most patients will have recall bias if more than 2 weeks.

3.4 Sample size

Using single population proportion formula, based on the assumptions of 50 % (p) because there is no previous study in Ethiopia and near by countries. With 95% confidence interval ($Z_{\alpha/2} = 1.96$) and with 5% marginal error(d), and 5% for non response rate:

$$n_i = \frac{(Z_{\alpha/2})^2 P (1- P)}{d^2} = \frac{(1.96)^2 0.5(1-0.5)}{0.05^2} = 384$$

With 5% non response rate the final sample size will be 403

3.5 Sampling procedure

Convenient sampling was used. Each interviewer goes to the allocated wards and asked all patients that are present at the time of interview that fulfill the criteria.

3.6 Inclusion and exclusion criteria

3.6.1 inclusion criteria

Those who had surgery a day at least and a maximum of 2 weeks back.

3.6.2 Exclusion criteria

Those who are critically ill

Mentally unstable

Comatose patients.

3.7 Variables

3.7.1 Independent variable

Age, sex, religion, ethnicity, marital status, occupation preoperative stay, and perioperative nutrition, post operative pain management, postoperative ambulation

3.7.2 Dependent variables

Early recovery

3.8 Operational definition

Perioperative nutrition- the dietary intake that a patient takes both pre and post operatively, it could be solid, liquid and semisolid.

Pre operative stay- how long they stayed before operation day in the hospital as a ward patient.

Post operative ambulation- is mobility from patient's bed to few distances at least to the rest room after the surgery.

Early recovery- is going to a stable functional status after operation not more than 3 days after the operation.

Enhanced recovery after surgery- a new method designed for patients to recover earlier and get back to their routine activity in a short amount of time.

Surgical site infection- an infection at the surgical site by any microbial organism after a patient is operated.

Comfortable after surgery- a psychological willingness of the patient to get back to his/her previous life after the surgery.

3.9 Data collection

The data collection was held at St Paul hospital at surgical wards. A coordinator from Clinical year 2 students was assigned and he allocated Clinical year 1 students attaching surgery at the time. The coordinator assigned the clinical year 1 students into three groups for the three wards that are available. The data collectors and the coordinator were given orientation about the research and how to interview each questions in the questioner. Data collection was by interviewer-administered questioner. It was collected from May 1- June 30 2017.

3.10 Data analysis and management

Data entry, cleaning, and analysis will be done using SPSS version 20 programs by principal investigator after data collection has been completed. After data collection was completed each data was entered on SPSS with accordance with the variable. First the frequency of each variable was determined. Then cross-tab between each variable and the dependent variable was determined. Further association was determined by using multivariable binary logistic regression for each category.

3.11 Ethical consideration

Approval and clearance for the study was received from SPHMMC. Participation was voluntarily and they were informed that all the data is only for scientific purpose. Verbal Informed consent was obtained from the participants before administration of the questionnaires.

Privacy and confidentiality was maintained at all times, all findings were portrayed in a confidential manner no personal or identifiable information was recorded or printed in the study.

4 Results

4.1 socio demographics

All of the data collected from 384 patients results are listed in the following tables. The Non-response was 19, and a total of 384 responded. From the total responders listed we can see that there is more male patients 59.1% (227). There were more amhara patients 136 (35.4%) and Oromo 125 (32.6%). There were more married patients 273 (71.1%) and single being 89 (23.2%). From occupation most of them have no job 99 (25.8%) and 62 patients were governmental employees making 23.7% and farmers were 80 making 20.8%. Most of the patients are orthodox 232 (60.4%) , Muslim 98 (25.6%) and Protestant 54 (14.1%). Most of the patients are no education 129 (33.6%), and 105 of the patients have learned primary education. Most aged above 50 180 (46.9%) .

Table 2-Table showing the frequency of age, sex, marital status, religion, ethnicity, educational status and occupation of the 384 patients in SPHMMC in surgical wards on may 1-june 30,2017 Addis Ababa.

Variables	Values	Total	Percent
sex	Male	227	59.1%
	Female	157	40.9%
Ethnicity	Gurage	44	11.5%
	Amhara	136	35.4%
	Oromo	125	32.6%
	Tigrae	30	7.8%
	Other	49	12.8%

Marital status	Single	89	23.2%
	married	273	71.1%
	Divorced	20	5.2%
	Widowed	2	0.5%
Religion	Muslim	98	25.5%
	Orthodox	232	60.4%
	Protestant	54	14.1%
Occupation	No job	99	25.8%
	Governmental employee	91	23.7%
	Private employee	62	16.1%
	Daily laborer	35	9.1%
	Farmer	80	20.8%
	Other	17	4.4%
Age	0-15	43	11.2%
	15-49	161	41.9%
	50<	180	46.9%
Educational status	No education	129	33.6%
	Primary	105	27.3%
	Secondary	94	24.5%
	Tertiary	56	14.6%

Out of 384 patients with goiter diagnosis were 67(17.4%), Appendicitis 39 (10.2%), Benign prostatic hyperplasia 26 (6.8%) and most patients had other diagnosis 162 (42.2%). Most of the surgeries were non-emergency 276 (71.9%) and emergency was 108 (28.1%). From 384 patients 291 had no comorbid illness, and those who have diabetes are 38 (9.9%), hypertension 33 (8.6%), immunocompromised 3 (0.8%). times per day were 129 (33.6%) and those that did not receive no medication were 12 (3.1%).

Table 3 Showing the diagnosis, condition and comorbid condition frequency of 384 patients in SPHMMC in surgical wards in may1- June 30, 2017 Addis Ababa.

Variables	Values	Total	Percent
Diagnosis	Goiter	67	17.4%
	Appendicitis	39	10.2%
	Benign prostatic hyperplasia	26	6.8%
	Sigmoid volvulus	24	6.3%
	Abdomino- thoracic injury	29	7.6%
	Cholelithiasis	37	9.6%
	other	162	42.2%
Condition	Emergency	108	28.1%
	Non-emergency	276	71.9%
Comorbid condition	Hypertension	33	8.6%
	Diabetes mellitus	38	9.9%
	Cardiac	19	4.9%
	Immunocompromised	3	0.8%
	Other	19	4.9%
	NO comorbid condition	291	75.8%

From 384 patients 376 (97.9%) of the patients were kept NPO before the surgery for less than 24 hours, and only 8 patients were kept for 2 days. After the surgery 176 (45.8%) of then were kept NPO for 24 hours, 124 patients for 2 days making 32.4%, and only 32 (8.4%) patents stayed NPO for more than 5 days. After the surgery 272 (70.8%) of the patients did not receive nausea prophylaxis and those that receive were 110 (28.6%). After the surgery most of the patients receive anti pain medication, those that receive twice per day were 211 (54.9%).

Table 4 Showing the Peri-operative diet, nausea and anti pain prophylaxis of 384 patients in SPHMMC in surgical wards on May 1 – June 30, 2017 Addis Ababa.

Variables	Values	Total	Percent
Before surgery NPO duration	Less than 24hrs	376	97.9%
	More than a day	8	2.1%
After surgery NPO duration	For 24hrs	176	45.8%
	2days	124	32.4%
	3-5 days	52	13.5%
	More than 5 days	32	8.3%
Nausea prophylaxis	Yes	110	28.6%
	No	274	71.4%
Anti pain given	Once per day	32	8.3%
	Twice per day	211	54.9%
	More than 3 times per day	129	33.6%
	Not given	12	3.1%

From 384 patients 92 of the patients had complication after the surgery and 288 did not have any complication. And the most common complication was surgical site infection 69 (76.7%) of them had it and 10 (11.1%) patients had urinary tract infection. From all of the patients 281 of them were catheterized (73.7%). After the surgery 128 (33.3%) of them were able to ambulate on the third day, and 105 (27.4%) were able to ambulate on the second day and only 27 (7%) were able to ambulate on the first day. After the surgery 206 (53.6%) of them are comfortable to get back on their life after their surgery, 113 (29.5%) are contemplating in the middle may be they will be comfortable in the future, and 10 (2.6%) patients do not think they will be comfortable at all and 25 (6.5%) do not know. Most of the patients were informed about early ambulation and what to intake after the surgery 338 (88.0%) and 36 of them from 384 do not know if they were informed or not.

Table 5 Showing the Complication, catheterization, ambulation, comfortable and information frequency of 384 patients in SPHMMC surgical wards in May 1 and June 30, 2017.

Variables	Values	Total	Percent
Complication	Yes	92	24.0%
	No	288	75%
	Don't know	4	1%
If yes to complication	Surgical site infection	69	76.7%
	Pneumonia	8	8.9%
	Urinary tract infection	10	11.1%
	Other	3	3.3%
Catheterized	Yes	281	73.7%
	No	92	26.3%
Ambulate	First day	27	7%
	Second day	105	27.4%
	Third day	128	33.3%
	Couldn't ambulate	24	6.3%
	After 3 days	100	26.0%
Comfortable in the future	Yes	206	53.6%
	Maybe	113	29.5%
	No	40	10.4%
	Don't know	25	6.5%
Informed about early ambulation	Yes	338	88.0%
	No	10	2.6%
	Don't know	36	9.4%

From 384 patients 118 (30.7%) of the patients only stayed for one day, and 230 patients stayed for 2-5 days and 36 (9.4%) patients stayed for more than 6 days before surgery. After the operation only 59 patients stayed for less than 3 days and 325 stayed more than 3 days.

Table 6- Showing the pre and postoperative stay frequency of 384 patients in SPHMMC in surgical wards on May 1 – June 30, 2017 Addis Ababa.

Variables	Values	Total	Percent
Pre-op stay	1day	118	30.7%
	2-5days	230	59.9%
	6days and above	36	9.4%
Post-op stay	1 -3day	59	15.4%
	More than 3 days	325	84.6%

Chi-square test were performed to check the association between the dependent variable and each of the independent variables. By using cross-tab between early recovery (those that stayed nor more than three days) and each socio demographic factor. Accordingly from the socio demographics age, ethnicity, occupation, educational status, marital status were significant.

Table 7 Showing the chi-square association between early recovery and sociodemographic factors from 384 patients in SPHMMC surgical wards from May 1- June 30, 2017 Addis Ababa.

Variables	Chi-square	<i>P</i> -V
Age	13.029	0.001*
Ethnicity	18.723	0.001*
Marital status	15.191	0.002*
Occupation	29.635	<0.01*
Educational status	13.835	0.003*
Religion	.503	0.778

(*) For significant variables

From the independent variables; diagnosis. Condition the surgery, NPO before surgery, NPO after surgery, Anti-pain medication, Nausea prophylaxis, Post operative ambulation, Information about early ambulation, were all significant.

Table 8 Showing the chi-square association between early recovery and other variables from 384 patients in SPHMMC surgical wards from May 1- June 30, 2017.

Variable	Chi-square	<i>P</i> -V
Diagnosis	49.815	<0.01*
Condition of the surgery	7.001	0.008*
Comorbid illness	8.210	0.084
Pre-operative stay	4.923	0.085
NPO before surgery	7.537	0.006*
NPO after surgery	17.420	0.001*
Anti-pain medication	31.003	<0.01*
Nausea prophylaxis	28.645	<0.01*
Ambulation	37.783	<0.01*
Information about early ambulation	7.285	0.026*
Complication	5.089	0.079
Catheterization	3.105	0.078
Comfortable	5.662	0.129

(*) For significant variables

Further analysis for significant variables in Chi- Square was done by multivariable binary logistic regression. It showed further association with ethnicity, age and information about early ambulation are associated. In the regression for age it shows that patients aged between 15-49 are 0.475 times from aged group above 50 to stay more than three days. Patients with Oromo ethnicity are 0.676 times likely than other ethnicity group to be staying more than three days and when age is constant 0.998 times likely to stay more than three days. Patients that did not receive nausea prophylaxis are 4.456 times likely to stay for three more days than that received and

when age is constant 4.306 times likely to stay more than three days than those that received.

Table 9 Showing multivariable binary logistic regressions for each category that are associated with early recovery from 384 patients that are in SPHMMC surgical wards form May 1- June 30,2017 Addis Ababa.

Variable	Early recovery		COR 95% CI	AOR 95% CI
	Until 3 days	More than 3 days		
Age 0-15	13	30	0.241 (0.106, 0.547)	0.224 (0.087, 0.576)
15-49	29	132	0.475 (0.250, 0.901)	0.492 (0.241, 1.007)
50 <	17	163	9.588	
Ethnicity Gurage	14	30	0.140 (0.037, 0.528)	0.132 (0.033,0.532)
Amhara	27	109	0.263 (0.076, 0.911)	0.528 (0.143, 1.951)
Oromo	11	114	0.676 (0.180, 2.534)	0.998 (0.255, 3.902)
Tigræ	4	26	0.424 (0.088, 2.042)	0.716 (0.136, 3.774)
Others	3	46	15.333	
Nausea prophylaxis No	25	249	4.456 (2.503, 7.932)	4.306 (2.261, 8.199)
Yes	34	76	2.235	

5 Discussion

This research has not been studied in Ethiopia, and near by countries. It is difficult to find other researches to compare this research with other similar researches that relate to this. So the results are compared with ERAS protocols.

The results of this research are an indication how conventional postoperative methods are not beneficial for postoperative stay. Few patients 59 of them are discharged within 3 days the rest stay for more than 3 days. In ERAS patients hospital stay is minimized for example in South Africa patient hospital stay had decreased from 2.61 to 0.5 (14). This indicates that we need to adopt ERAS protocol in order to decrease hospital stay only 15.4 % are discharged early. The number of patient turnover in our hospital shall be increased since there are many patients from different areas waiting for surgery.

Most of the patients 128 of them are not ambulating early they start to walk few distances after three days, that is inadequate and prolonged compared to ERAS where patients are advised to ambulate early even in the first day after operation. When patients ambulate late there recovery is also prolonged, and patients are prone to develop complications like deep vein thrombosis. Patients should be advised to ambulate earlier in order to achieve early recovery.

The number of patients that receive nausea prophylaxis is also very low 274 of the patients do not receive prophylaxis compared to ERAS where they have standing dose of nausea prophylaxis patients do not suffer from nausea and vomiting after the surgery. Nausea and vomiting is a complication of the anesthesia and if patients are not given any medication for it patients can vomit and aspirate to the lungs. The discomfort of nausea can be detrimental for the patient outcome because patient will not feel well and divert the patient attention to nausea than getting better. For this reasons we shall give nausea and vomiting prophylaxis for the first day after surgery for all patients that have undergone surgery using general anesthesia.

As compared to ERP patients get adequate anesthesia during surgery they use epidural anesthesia to decrease postoperative paralytic ileus and decrease patient discomfort even after surgery once the patient is able to take per mouth analgesia they would discontinue the epidural analgesia (10). In our set up general or spinal anesthesia is used and later on intravenous or intra muscular anti- pain medication would be used to alleviate pain. This research showed that only 211 patients receive anti- pain medication twice per day, and only 129 receive more than three times per day. As compared to ERAS this is inadequate and only those that ask when they are feeling pain are receiving as they were supposed to. Much has to be done because if patients are feeling pain they would not be able to expectorate, to ambulate early, to get better in a faster amount of time. It is important to make it a standing dose so that every one receives the same amount of analgesia and no body feels pain after surgery.

From ERP patients should not be kept NPO for 8 hours before surgery almost 376 are kept NPO the day before surgery or in emergency cases for at least 8 hours. ERP suggest keeping patients are allowed to eat solid foods until 6 hours before surgery and till two hours before surgery patients can drink clear carbohydrate liquids (10). This is beneficial for patients because they would be able to fight surgical stress and have more energy stores. Patients will not have poor wound healing because of insulin resistance that is present in the traditional method of keeping patients NPO for very long and surgical stress response. Patients would benefit much better if kept NPO for few hours and adapt this protocol for the elimination of the surgical stress response.

Patients are kept NPO after surgery for mostly for 24 hours about 176 and 124 for 2 days. In ERAS patients are allowed within few hours after the surgery to take sips. (15) This is beneficial for the bowel to return to function, and also patient's catabolic state after surgery can be reversed and be able to regain back the loss early. When patients

get energy from feeding patient can be able to go back to their preoperative functional state early and this would be beneficial for early recovery.

Most of the patients 75% (288) of them had no complication after the surgery. This shows that it is not complication after surgery that makes patients stay for more than 3 days other factors are important for the post operative stay in SPHMMC surgical wards. In ERAS patient's complication is minimized by all the necessary precautions like removing drainage tubes, catheters, Nasogastric tubes, central lines, early ambulation, early feeding, and strict nausea vomiting prophylaxis (10). Even though complications are few, it is beneficial to adapt to ERAS protocol to totally minimize complication.

Patients above aged between 15-49 are likely to stay for more than three days after operation than aged above 50 in this research. This suggests that patient education is much relevant than assuming older aged are likely to recover late. And Oromo patients are many in SPHMMC because of the catchment areas for this hospital are residing in Oromo populated regions. As compared to other ethnic groups Oromo's are more likely to stay long post operatively.

6 Strengths and limitation of the study

6.1 Strengths

This research showed St Paul's hospital surgical ward data that can be used for future researches and references. It paves a way for St Paul to consider more on ERAS protocols. This research used primary data by self-administered questioner, which makes it more reliable.

6.2 Limitations

As being cross-sectional in the design, this study shares the drawbacks of similar cross-sectional studies. It lacks seasonal differences in early recovery after surgery. The research questioner is not standardized.

7 Conclusion

Most of the patients are discharged after 3 days. Most of them do not ambulate till the third day. From all of the patients complication is not common but if it happens surgical site infection is quite common in the wards. Most of them are boys aged above 50 and orthodox in religion and amhara in ethnicity. Most of the patients have no education and have no jobs.

Pre-operatively usually most of them stay for 2-5 days not emergency condition. Almost all of the patients are catheterized even though urinary tract infection is found in only 10 patients. Most of the patients do not receive nausea prophylaxis. Most of the patients maximum receive anti pain medication two times per day. Most of the patients think they will get back to their previous lives after the surgery, indicating they are psychologically ready to get better.

8 Recommendation

For patients

- To encourage early ambulation for all of the patients after surgery

For nurses

- To increase anti-pain medication frequency at least 3 times per day
- To increase nausea and vomiting prophylaxis

For the surgery department

- To apply in our hospital ERAS protocol.

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