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**ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES,
SCHOOL OF MEDICINE, TIKUR ANBESSA SPECIALIZED HOSPITAL**

PATIENT SATISFACTION WITH POSTOPERATIVE PAIN MANAGEMENT
AND ITS ASSOCIATED FACTORS IN ADULT PATIENTS UNDERGOING
ELECTIVE SURGERY AT TIKUR ANBESSA SPECIALIZED HOSPITAL,
ADDIS ABABA ETHIOPIA

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**ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES,
SCHOOL OF MEDICINE, TIKUR ANBESSA SPECIALIZED HOSPITAL**

A RESEARCH THESIS FOR THE PARTIAL FULFILLMENT OF THE
REQUIREMENT OF SPECIALTY CERTIFICATE IN ANESTHESIOLOGY
CRITICAL CARE AND PAIN MEDICINE

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Addis Ababa, Ethiopia

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This is to certify that the thesis prepared by Dr. Nura Kedir titled *Patient Satisfaction with Postoperative Pain Management and its Associated Factors in Adult Patients Undergoing Elective Surgery at Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia* and submitted in partial fulfillment of the requirement for the specialization in Anesthesiology, Critical care and Pain Medicine complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Sign by the Examining Committee:

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Acronyms and Abbreviations

AAU: Addis Ababa University

ACCPM: Anesthesiology Critical Care and Pain Medicine

ANOVA: Analysis of variances

AOR: Adjusted Odds Ratio

APS: American Pain Society

ASA: American Society of Anesthesiologists

BMI: Bod mass Index

CI: Confidence Interval

COR: Crude Odds Ratio

GA: General Anesthesia

GI: Gastrointestinal

GC: Gregorian Calendar

IASP: International Association for the Study of Pain

IQR: Inter quartile range

IRB: Institutional Review Board

JUSH: Jimma University Specialized Hospital

MD: Mean Difference

NRS: Numeric Rating Scale

NSAIDS: Non-Steroidal Anti-Inflammatory Drugs

OR: Odds Ratio

PACU: Post Anesthesia Care Unit

PCM: Paracetamol

PNB: Peripheral Nerve Blocks

POQ: Pain Outcomes Questionnaire

POQ-R: Pain Outcome Questionnaire- Revised

QA: Quality Assurance

QI: Quality Improvement

SD: Standard Deviation

TASH: Tikur Anbessa Specialized Hospital

Abstract

Background: Patient satisfaction with postoperative pain management is a relevant but difficult measure of quality of care. It is a complex concept which highly depends on subjective judgment and is influenced by emotional feelings, sociocultural values and expectations. However, data regarding this issue is limited in the study area. Therefore, generating data in terms of patients' satisfaction will reduce this limitation. It will also have a significant input in the formulation of appropriate strategy to modify and transform the overall post-operative pain management in to one that is patient centered.

Objective: Assess level of patients' satisfaction and its associated factors in adult patients who underwent elective surgery at Tikur Anbessa Specialized Hospital from June 1 to September 15, 2021 GC.

Methods: An institution-based cross-sectional study was conducted from June 1 to September 15 2021 at Addis Ababa University, TASH using the APS-POQ-R tool. Trained data collectors approached participants within 24-72 hours of surgery for interview. Data was entered, cleaned and analyzed using SPSS version 25 software. Level of satisfaction was dichotomized in to high and low satisfaction using the median split technique. Bivariate and Multivariate Binary logistic regression and Pearson's correlation tests were done to identify factors associated with level of patient satisfaction. One way ANOVA and Mann Whitney- *U* tests were done to reveal differences in pain intensity and satisfaction across different groups of independent variables. P values less than 0.05 were considered significant throughout the analysis. Results were presented using texts, tables, charts and graphs.

Results: Reliability test showed, the APS-POQ-R tool had good internal consistency (Cronbach's $\alpha = 0.84$). A total of 335 individuals participated in the study (98.5% response rate). Only 19% of the participants had information about their pain management. The mean satisfaction score was 7.13 (SD \pm 2.23) respectively. The proportion of patients with high satisfaction was 57.3%. Satisfaction scores were higher in Obstetrics, Gynecology and Urology patients than Orthopedic patients (ANOVA, $p < 0.05$). Female sex, increased degree of pain relief and use of non-pharmacological pain relief methods were significantly associated with high level of satisfaction ($p < 0.05$). Higher preoperative and postoperative pain level, longer duration of surgery, increased levels of affective behaviors and adverse effects had inverse relation with patients' satisfaction ($P < 0.05$).

Conclusion: Compared to similar studies, satisfaction of patients with postoperative pain management was substantially low in this study. Presence of high intensity of pain was an important factor for this finding. A huge gap in information provision regarding patients' pain management was also observed. In order to alleviate these problems, we recommend for nurses and physicians to provide the necessary information on the available pain treatment modalities and conduct a thorough evaluation and management of preoperative and postoperative pain.

1. Introduction

1.1. Background

From the moment of the start of surgical procedures, to the time of discharge, patients experience some degree of pain depending on the extent of tissue injury. Studies indicate that degree of pain control in these patients is an important determinant of patient satisfaction during the perioperative period.¹ The extent to which a patient's expectations are fulfilled by the given care is defined as patient satisfaction. It is a complex concept which highly depends on the subjective judgment of a patient and is influenced by multiple factors such as patient's emotional, social beliefs, cultural values, past experiences, and future expectations.² It is determined by the quality of the provided care and the patient's expectations of that care. Dissatisfaction arises if the patient experiences a discrepancy between expected and provided care.³ In this particular context The key to high level of satisfaction is meeting the patients' expectations regarding their pain management.

Patients' satisfaction with post-operative pain management affects the outcomes of health care services, and it determines the post-operative recovery of these patients. Complications resulting from ineffective postoperative pain management include deep vein thrombosis, pulmonary embolism, coronary ischemia, myocardial infarction, pneumonia, poor wound healing, insomnia, demoralization, extended lengths of stay, readmissions and patient dissatisfaction with medical care. Treating chronic pain that develops from acute pain over a lifetime of a young adult results in economic burden.⁴⁻⁷ In the past, absence of complications and stable vital signs were used as a measurement of clinical success. However, patient satisfaction is established to be the most relevant indicator of clinical success in contemporary practice. A pain management expressed as a satisfactory experience by the patient is considered a desired outcome.⁸

Patients' satisfaction can be influenced by multiple factors during the acute pain management period. Some of the factors evidenced by studies include gender, age, perioperative expectations, information given before the surgery, ASA physical status, preoperative pain medication, type of anesthesia, type and duration of surgery, communication of staff with patient and experience of pain relief.⁹ Nurses and Physicians play a major role in perioperative patient care including assessment and treatment of postoperative pain. As pain affects every system of the body, untreated or inadequately treated pain can be manifested in a spectrum of symptoms and this should be discussed with the patient during the perioperative period. Many researches stated

education given to the patient regarding the postoperative pain management had a significant role in improving patient satisfaction with pain management regardless if the intensity of pain that was experienced. The preoperative visit by the anesthesia provider is an excellent window to give proper education regarding the anticipated postoperative pain level with detailed explanation on pharmacologic and non-pharmacologic pain management options. Approaching patients to communicate and understand their concerns, worries and experiences of pain followed by offering them information about available pain treatment modalities significantly enhances patient satisfaction.¹⁰ This should be accompanied by proper assessment of pain level and management in the postoperative period by the health care provider.

The health facilities of Ethiopia together with their expanding services, deal with large numbers of patients that require surgical intervention. Acute postoperative pain and poor patient satisfaction with pain management is a major challenge in these facilities. In a 2014 study done in Jimma, the reported prevalence of acute pain in surgical patients was 91.4% with a 50% patient satisfaction rate.¹¹

In TASH, perioperative pain is managed by both the Pain Service team in the department of ACCPM, and the primary surgical team. The usual postoperative multimodal analgesia regimens are a combination of opioids and non-opioid analgesics. The commonly used opioids include fentanyl, morphine and tramadol. Non-opioid analgesics are paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs) and local anesthetic agents. Regional anesthetic techniques are utilized whenever indicated and as much as resources allow.

Even though there is an established team of health care providers dedicated to giving pain service, so far, there is no means of measuring the quality of the provided service in the study area. In such circumstances, generating a baseline data up on which future quality improvement projects may be based on is the first step in the journey of improving the quality of pain management.

1.2. Statement of the Problem

The International Association for the Study of Pain (IASP) defined pain as “An unpleasant sensory and emotional experience associated with, or resembling that associated with actual or potential tissue damage”. Individuals experience pain under different circumstances at some point in their lives. Acute post-operative period is a predictable period where a person can experience pain depending on multiple factors such as the nature of the surgery and degree of

tissue damage. Adequate management of acute pain is crucial for fast recovery, early discharge from hospital and prevention of progression to chronic pain.

Globally, pain control remains unsatisfactory despite the overwhelming rationale for effective post-operative pain control. In a study that assessed patients' postoperative pain experience and the status of acute pain management, approximately 80% of patients experienced acute pain after surgery.⁶ Other studies suggested that between 47% and 75% of all surgical patients experience significant postoperative pain.¹² This indicates pain management is far from ideal.

Researchers worldwide have tried to assess the level of patient satisfaction as an outcome of postoperative pain management. Despite the availability of a wide range of studies on patient satisfaction with postoperative pain management, there appears to be a scarcity of evidence regarding this issue in Ethiopia. Furthermore, there is no consensus as to what matters the most to patients when it comes to pain management. Some patients may be satisfied while experiencing severe pain. While others feel dissatisfied despite feeling less pain. This lack of consensus on what constitutes patient satisfaction with pain management in the postoperative period poses a major problem for the health services. In this study, patient satisfaction with acute postoperative pain management was evaluated and reasons for patient satisfaction were examined to address this problem.

1.3. Significance of the Study

Pain after surgery is a major problem worldwide. Many researches have been done to address this issue in different countries. Despite this, there are only few published studies on postoperative outcomes and the quality of post-operative pain management in this country. Studies on postoperative pain outcomes will help improve the current practice. A very attractive concept of assessing the quality of post-operative pain management is addressing this issue from the patient's perspective. This can be achieved by measuring the level of satisfaction of the patients with the pain service they received in the immediate post-operative period.

Little emphasis is given to acute post-operative pain in the surgical patient in this country even though it has huge physiological and psychological consequences on the patients' recovery. There hasn't been a means to measure the quality of post-operative pain management of surgical patients either. Therefore, it would be prudent to assess the level of patient satisfaction with the post-operative pain management as an indicator of the quality of management. This will help identify the quality in the management of patients' pain and improve the practice subsequently.

This study will have a significant input in the formulation of appropriate strategy to modify and transform the overall post-operative pain management of surgical patients, in to one that is patient centered.

2. Literature Review

Poorly controlled pain is not just an unpleasant experience that occurs after surgery, but drives the stress response in addition to the surgical injury and causes varieties of complications. Pain is a subjective experience and the amount of pain suffered by an individual does not necessarily relate either to the size of an operation or to the amount of pain relief provided. This makes it difficult to assess the quality of pain management objectively and warrants individualized pain management approach. Therefore, pain treatment has to be effective enough to improve the overall outcome of patients.

Effectiveness of pain management is commonly assessed by such measures as the degree of pain relief and satisfaction of patients with the process of pain treatment. Patient satisfaction as an outcome measure is a recent focus in health care. But pain relief has been studied since ancient times. Both are acceptably good indicators of quality of care but are subjective assessments. Patient satisfaction score is a deliberately subjective and personal evaluation of health care providers that cannot be determined by direct observation. Satisfaction scores are related more to psychosocial aspects of care than to technical aspects which are better reflected in pain relief measurements.¹³

Patient satisfaction has become an ideal measure quality of treatment even though it is difficult to achieve. Patients continue to announce that they expect pain after surgery and experience moderate to high pain levels, yet again, they report relatively high satisfaction. This indicates that satisfaction rating in pain treatment is not only affected by pain relief but also by a myriad of other factors. Researchers worldwide have used the APS-POQ-M and APS-POQ-R questionnaires to assess patient satisfaction with pain management and to elucidate the factors associated with satisfaction. The goal of this literature review is to shade lights on the available data concerning patient satisfaction with postoperative pain management and the various predictors of satisfaction.

2.1. Patient Satisfaction and Degree of Pain Relief

Patient self-report of pain intensity, pain interference with activities, and intensity of overall pain are used to measure degree of pain relief. Patient satisfaction measures how well patients' expectations were addressed and their overall perceptions towards the process of pain treatment. The relationship between satisfaction and pain severity has never been straight forward. Both patient satisfaction and pain relief levels are multidimensional and influenced by age, gender, personal preferences, expectations, communication between health care providers and the

patient, cultural background and the measure of care. In some instances, patients report high satisfaction with pain management even if they experience moderate to severe pain.

According to a prospective cross-sectional study that was conducted among 252 postoperative patients between February 13 to April 30, 2012 in JUSH, the incidence of postoperative pain was 91.4%. Measured on a 10-point NRS, the mean pain intensity was 6.72 ± 1.44 . Despite this, 50% of the patients were adequately satisfied with their pain management. This study showed that, even though majority of patients experienced pain, they had a paradoxical high satisfaction.¹¹

Similarly, a survey of 294 postoperative patients in a Hong Kong hospital in 2001 reported that, approximately 85 % of the patients complained different degrees of pain. In this survey, 87.6% of the patients were satisfied with their pain management despite the high frequency of experienced pain.¹²

On the other hand, a secondary analysis done on 258 surgical patients of two hospitals of south western United States reported an inverse relationship between pain intensity and patient satisfaction. In the first data set involving 167 patients, the mean pain score was 5.6 ± 2.2 and 78.4% of the participants reported they were satisfied with the postoperative pain management services. In the second data set containing 91 participants, the mean pain score was 4.5 ± 2.5 and 85.7% were satisfied. This indicated that lower pain score was associated with higher satisfaction.¹³

Similar finding was reported by a 2010 American study by Gordon et al. done to validate the APS-POQ-R tool in assessing the pain management outcomes of patients including patient satisfaction. The study included 299 medical-surgical patients from two different hospitals. the mean satisfaction score for the medical patients was 7.88 ± 2.7 ; $P < .01$ which was significantly lower compared to surgical patients 8.59 ± 1.9 . Lower pain score was a significant determinant factor of patient satisfaction.¹⁴

Another Psychometric evaluation of the Chinese version of the APS-POQ-R concerning pain management was done in 236 Chinese orthopedic patients. In this study the mean patients' satisfaction score with post-operative pain management was 9.0819 ± 1.57 . This data showed high degree of satisfaction, indicating pain in these postoperative patients was generally under control.¹⁵

In a cross-sectional research done in Sahlgrenska University Hospital Sweden to assess the overall patient satisfaction with postoperative pain management, 81% of the patients reported to

be satisfied or very satisfied with pain management despite experiencing higher intensity of pain. In this study pain relief rather than severity of perceived pain was a significant determinant of pain satisfaction.¹⁶

According to the above literatures, degree of pain relief and intensity of pain are not the only determinant factors that influence level of patient satisfaction with the pain management in the acute postoperative period. Furthermore, satisfaction is an elusive measure of quality of care which makes it important to search for the important predictors of satisfaction other than the two mentioned factors earlier.

2.2. Predictors of Patient Satisfaction

Conditions that could potentially predict satisfaction of patients towards postoperative pain management have been stated in many studies. Factors such as gender, age, preoperative expectations, information given prior to surgery, ASA physical status, type of anesthesia, type and duration of surgery are frequently said to affect satisfaction. Patients' level of satisfaction could be increased via providing preoperative information related to postoperative pain and nonpharmacological treatment methods.^{9,17,18}

In a cross sectional study done in Helsinki University Hospital in 2005 satisfaction was significantly correlated with received preoperative information and well-being ($p < .01$).¹⁹ Female sex was significantly associated with dissatisfaction in multiple studies ($P < 0.05$).^{11,16,20-23}

According to a Turkish research conducted between January 2015 and January 2016 in 250 surgical patients, factors like degree of pain relief, participation in pain treatment decisions were positive predictors of patient satisfaction whereas activity interference in bed, depression caused by pain, and least pain in 24 hours were found to be significant negative predictors of patient satisfaction.¹⁷

A research done in Gondar, Ethiopia assessed Patient's Satisfaction and Associated Factors regarding Postoperative Pain Management. In this study, factors significantly associated with the level of satisfaction were ASA1 (AOR=3.55: 95% CI=1.20–10.55) and ASA 2 patients (AOR=3.72: 95% CI=1.04–13.28), absence of postoperative pain (AOR=1.86: 95% CI=1.02–3.39), peripheral nerve block (AOR=9.14: 95% CI=3.93–20.86), analgesic received before request (AOR=6.90: 95% CI=3.72–12.83), and received systemic analgesics (AOR=6.10: 95% CI=1.17–33.91).⁹

Patient satisfaction is an excellent indicator of quality of care in acute postoperative pain management. Little is known about the level of patient`s satisfaction with the management in the study area. This study tried to determine patient satisfaction and identify the factors that affect patient satisfaction with postoperative pain management in an attempt to generate new set of data.

3. Objectives

3.1. General Objectives

- To assess the level of patient satisfaction with postoperative pain management and its associated factors in adult patients who underwent surgery at Tikur Anbessa Specialized Hospital (TASH) from June 1 to September 15, 2021.

3.2. Specific Objectives

- Assess the level of patient satisfaction with postoperative pain management in adult surgical patients who underwent surgery at TASH from June 1 to September 15, 2021.
- Determine factors affecting patient satisfaction with postoperative pain management in adult surgical patients who underwent surgery at TASH from June 1 to September 15, 2021.

4. Methods and Materials

4.1. Study Area

The study was conducted at Tikur Anbessa Specialized Hospital (TASH). Tikur Anbessa Specialized Hospital, School of Medicine, College of Health Sciences, and Addis Ababa University is the largest tertiary specialized hospital in Ethiopia with an 800-bed capacity. It was established in 1964, and is now the main teaching center for both clinical and preclinical training of most disciplines. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. It is also the largest surgical center in Ethiopia. The various departments, faculties and residents under specialty training in the School of Medicine provide patient care in the hospital. In addition, almost all regional and federal hospitals in Addis Ababa are affiliated to the School of Medicine as clinical services and training sites.

4.2. Study Design and Period

An Institution-based cross-sectional study was conducted to assess the level of patient satisfaction with postoperative pain management and its associated factors in adult patients undergoing surgery at Tikur Anbessa Specialized Hospital (TASH) from June 1 to September 15, 2021.

4.3. Source Population

All adult surgical patients who visited TASH for surgery were the source population.

4.4. Study population:

All adult patients who underwent elective surgery at TASH and stayed in the hospital more than 24 hours postoperatively from April to September 2021 were included in the study.

4.5. Eligibility

4.5.1. Inclusion Criteria:

Every adult patient admitted to the surgical ward of TASH after surgical procedure and able to give verbal, informed consent was included in the study.

4.5.2. Exclusion Criteria

- Patients who refused to consent for the study,
- patients who were unable to provide verbal informed consent,
- patients younger than 18 years,
- those patients who were not alert enough to respond, and
- those patients who were unable to speak were excluded from the research.

4.6. Study Variables

4.6.1. Dependent Variables.

- Level of patient's satisfaction

4.6.2. Independent Variables

- **Sociodemographic Factors:** Age, sex and level of education.
- **Preoperative Factors:** History of previous surgery, preoperative pain status, preoperative information about postoperative pain management, BMI, ASA functional class and NPO time.
- **Surgical Related Factors:** Type of surgery, mode of anesthesia, duration of surgery,
- **Postoperative Factors:** Multimodal analgesia, rescue analgesia, non-pharmacologic pain treatment methods, Postoperative pain level, Affective behaviors, Adverse effect of drugs.

4.7. Sample size determination

Sample size was calculated using a single population proportion formula. To determine the sample size the following assumption was used. In a previous study done in the University of Gondar Specialized Hospital, rate of satisfaction was 72.2% ⁹, with 5% margin of difference, and CI of 95%.

$$n = \frac{\left(\frac{Z\alpha}{2}\right)^2 p(1-p)}{W^2}$$
$$n = \frac{1.96^2 0.722(1-0.722)}{0.05^2} = 309$$

Where n= is the required sample size, Z= critical value for normal distribution at 95% confidence level (1.96), W=0.05 (5% margin of error), α =the level of significance, with best estimate of the population proportion. Then 10% of nonresponse rate was added. Therefore, based on the above-mentioned assumptions, 340 participants were the final study samples.

4.8. Sampling Procedure and data Collectors

A total enumeration (purposive) sampling technique was used for selecting study participants. Participants who fulfilled the eligibility criteria were taken from nine different surgical specialties consecutively until the sample size was reached. Trained data collectors approached participants at a convenient time in their respective wards, used the consent form in the first page of the questionnaire to explain the study, and to obtain verbal consent. Involvement in the study was voluntary and patients were given assurances of confidentiality and that their care would not be affected in any way whether they agreed to participate or not.

4.9. Data collection tool

To assess the level of patient satisfaction with postoperative pain management and its associated factors, the APS-POQ-R tool was used since its prediction value for patient satisfaction was tested to be good in 2010 by Gordon et al.¹⁴ In a research done in Malaysia one year ago, the construct validity and model fit of this tool was also tested to be good using confirmatory factor analysis, re affirming its strength.²⁴ This tool has 18 primary continuous items, 16 of which were scaled from 0-10 and two items were scaled in percent from 0 to 100%. Additionally, using 3 more questions, the tool directly collects information about the prevalence and types of nonpharmacological strategies used to manage pain. Level of satisfaction is assessed by a single

item question in the questionnaire. The tool was used after translating to the predominantly spoken Amharic language which was then translated back to English language by another translator to check for consistency with the original English version. Reliability test for the scale items in the questionnaire was done to check for internal consistency using the Cronbach's α coefficient after reverse coding of the negatively coded items for maximum yield. Since the main objective of this research was focused on assessing the level of patient satisfaction with postoperative pain management as a primary outcome, further analysis to confirm the construct validity and factor analysis of item subscales was not done.

The Amharic version of the questionnaire was applied as a face to face interview to the study participants. To obtain socio-demographic and clinical data relevant to the study, participants were interviewed about their age, gender, educational level, preoperative pain level, previous history of surgery and preoperative NPO time. Participants' charts were also revised to obtain the rest of the clinical data.

4.10. Data Quality control

To assure the quality of data the following measures were taken. A pre-test was conducted at Menelik II Hospital on 7% of the sample size and analysis showed no modification in the questionnaire was required. Reliability test of the APS-POQ-R tool was done using the Cronbach's α coefficient. The completed questionnaire was checked for completeness before data entry. Data cleaning was done before data analysis to check and remove the questions with missing values.

4.11. Data Collection and Analysis

During the data collection period, patients were approached within 24 to 72 hours of surgery and interviewed regarding the first 24 hours of post-operative pain experience management they received. Individual participation and responses were not shared directly with staff. A total of 354 participants were interviewed. Five patients were excluded since they were under the age of 18, whereas 14 of the patients were excluded for incomplete data. Finally, 335 patients were included in the final data analysis. Data was entered into SPSS (Version 25) statistical software for analysis. After data cleaning, descriptive statistics were calculated for all patient characteristics and APS-POQ-R response items using frequency (percent), mean (SD) or median (IQR) according to distribution. The level of satisfaction with postoperative pain management

was measured on a scale of 0 to 10 where 0 indicated extreme dissatisfaction and 10 indicating extreme satisfaction. The distribution of satisfaction among patients was negatively skewed. Therefore, satisfaction was dichotomized into “high satisfaction” and “low satisfaction” based on the median split technique. Bivariate and multivariate Binary logistic regression analyses were used to identify factors determining the level of patient satisfaction and to control for the possible confounding factors. Variables with a p-value of 0.2 in Bivariate logistic regression were selected for multivariate logistic regression analysis. Pearson correlation testing was done to identify the relationship between satisfaction and predicting factors. Mann-Whitney U test and One-way ANOVA were used to test if there were differences in pain intensity, across different groups of independent variables. P values less than 0.05 were considered as significant throughout the analysis. Results were presented using texts, tables, charts and graphs.

5. Operational Definitions

Adverse Effects: Unintended effects of drugs used to treat pain which includes nausea, vomiting, drowsiness, and dizziness and severity is graded from 0 to 10.¹⁴

Affective behaviors: Emotional feelings of depression, anxiety, helplessness, and fright that occur because of the intensity of pain and severity is scored from 0 to 10.¹⁴

ASA Physical status: a grading system used preoperatively to compare the severity of preexisting comorbidities in patients coming to surgery

- **ASAI:** A normal healthy patient
- **ASAII:** A patient with mild systemic disease that results in no functional impairments
- **ASAIII:** A patient with severe systemic disease that results in functional limitations
- **ASAIIV:** A patient with severe systemic disease that is a constant threat to life
- **ASAV:** A moribund patient who is not expected to survive with or without the operation
- **ASAVI:** A brain-dead patient whose organs are being removed with the intention of transplanting them into another patient.

Distraction: It is an adaptation behavior to a painful event through which the person diverts attention away from the pain with such activities as watching videos or reading.²⁵

Multimodal Analgesia: Two or more analgesic techniques or drug classes that employ different mechanisms of action for pain relief

Pain Intensity based on the Numerical Rating Scale (NRS)

- **No pain:** A score of 0 on a scale of 0 to 10
- **Mild pain:** Scores between 1-3 on a scale of 0 to 10
- **Moderate pain:** Scores between 4-6 on a scale of 0 to 10
- **Severe pain:** Scores between 7-10 on a scale of 0 to 10

Rescue Analgesia: A dose of analgesics given to provide relief of intermittent breakthrough pain based on patient request.

Patient satisfaction with pain management: Perception of the patients regarding the outcome of pain management and the extent it meets their needs and expectations.²⁶

High satisfaction: the level of satisfaction of patients when they score the median and above.

Low satisfaction: the level of satisfaction of patients when they score below the median.

Postoperative pain: Sensation of pain in and around the surgical incision, measured using a 10 point Numerical Rating Scale.

Preoperative pain: preoperative pain associated with the surgical illness or injury, measured using a 10 point Numerical Rating Scale.

Non-Pharmacologic: Referring to therapy that does not involve drugs

pharmacologic: Referring to therapy that relies on drugs

Relaxation techniques: the act of stretching, calming, and loosening up in order to decrease muscle tension and reduce stress.²⁷

Pain Relief: The process of reducing or getting rid of pain using pharmacological or non-pharmacological approaches.

6. Ethical Consideration

Ethical clearance was obtained from the department of Anesthesiology Critical Care and Pain Medicine of Addis Ababa University. The aim of the study was clearly explained to the study participants. Information was collected after obtaining verbal informed consent from each participant. The personal information of study participants was kept entirely anonymous, and confidentiality was assured throughout the study period. The data was used only for the intended purpose of the study.

7. Result

Reliability of the total scale items of the APS-POQ-R tool was determined to be good in this research (Cronbach's $\alpha=0.84$). Three hundred thirty-five individuals participated in the study with a 98.5% response rate. Of the total participants, 54(16%) had incomplete data for BMI. Other than that, the rest of the information were complete and there were no missing data.

7.1. Patient Characteristics

Descriptive statistics showed that two thirds (217, 64.8%) of the study participants were females. One hundred eight (32.2%) of the participants fell under the age group of 26-35 years with the median age of 33 (IQR= 22). Of the total participants, 41.8 % completed secondary education level while 15.2% had no any form of education.

Table 1 : Sociodemographic Characteristics of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021 (N=335).

Variable	Frequency	Percent	
Sex	Female	117	34.9
	Male	218	65.1
Age	18-25	82	24.5
	26-35	108	32.2
	36-45	56	16.7
	46-55	39	11.6
	≥56	49	14.6
Level of Education	No education	51	15.2
	Primary	95	28.4
	Secondary	140	41.8
	More than Secondary	49	14.6

7.2. Clinical Data

One hundred nineteen (35.5%) participants had history of previous surgery. One hundred forty-nine (44.5%) of the participants reported to have some degree of preoperative pain, 17.6% of which was in severe pain category. Almost all participants had preoperative NPO time more than six hours preoperatively and 60.9% were classified as ASA class II patients. Participants were admitted to the one of the following specialty wards; Obstetrics and Gynecology, Orthopedic, Cardiothoracic, Gastrointestinal, ENT, Urology, Vascular or Neurosurgery. One-third of the participants were obstetric cases (32.5%) followed by Urology (17.6%) and GI (10.7%) cases. More than half of the cases (56.4%) were done under Central neuraxial anesthesia and the rest were done under GA. Two-thirds of the surgeries were done in less than 2 hours. From the 291 participants who had BMI record, 55.7% had normal weight while 6.2% were obese.

Table 2. Clinical Data of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.(N=335)

Variable		Frequency	Percent
History of previous surgery	Yes	119	35.5
	No	216	64.5
Preoperative pain level	No pain	184	54.9
	Mild pain	33	9.9
	Moderate pain	59	17.6
	Severe pain	59	17.6
Preoperative fasting time	2 hrs.	2	0.6
	3-6 hrs.	10	3.0
	>6hrs	323	96.4
Type of surgery	Gastro intestinal	45	13.4
	Neurosurgery	20	6.0
	Obstetrics	109	32.5
	Orthopedics	36	10.7
	ENT	7	2.1
	Urology	59	17.6
	Cardiothoracic	14	4.2
	Vascular	13	3.9
	Gynecology	32	9.6
Mode of anesthesia	General anesthesia	146	43.6
	Central neuraxial anesthesia	189	56.4
Duration of surgery	≤2hr	219	65.4
	2-4hrs	94	28.1
	>4hrs	22	6.6

7.3. Pain Intensity

Regarding patients' experience of pain, three questions were asked. The first two questions were about patients' least and worst pain experience during the first 24 hours. Both were measured on a scale of 0 to 10 which were categorized from no pain to severe pain based on the NRS. The third question was asked to assess the percentage of time spent in severe pain and was measured on a scale of 0 to 100%.

Overall, 70.1% of the participants experienced some degree of pain in the first 24 hours of postoperative period. Participants' response regarding their worst pain experience indicated that, 124 (37%) patients had moderate pain while 13% experienced severe pain and 29.9 % patients had a pain score of zero in the first 24 hours. On the other hand, in the least pain category, 50.7% of the participants reported that mild pain was the least pain they experienced in the first 24 hrs. while 11.3% had moderate pain and 11% had severe pain.

The mean scores of least and worst pain experiences were 1.61 ± 1.93 , and 3.36 ± 2.8 respectively. The estimated percentage of time spent in severe pain was scored from 0-100 with mean and SD

of 23.13±24.4. Percentage of pain intensity across surgical specialties is displayed in the chart below.

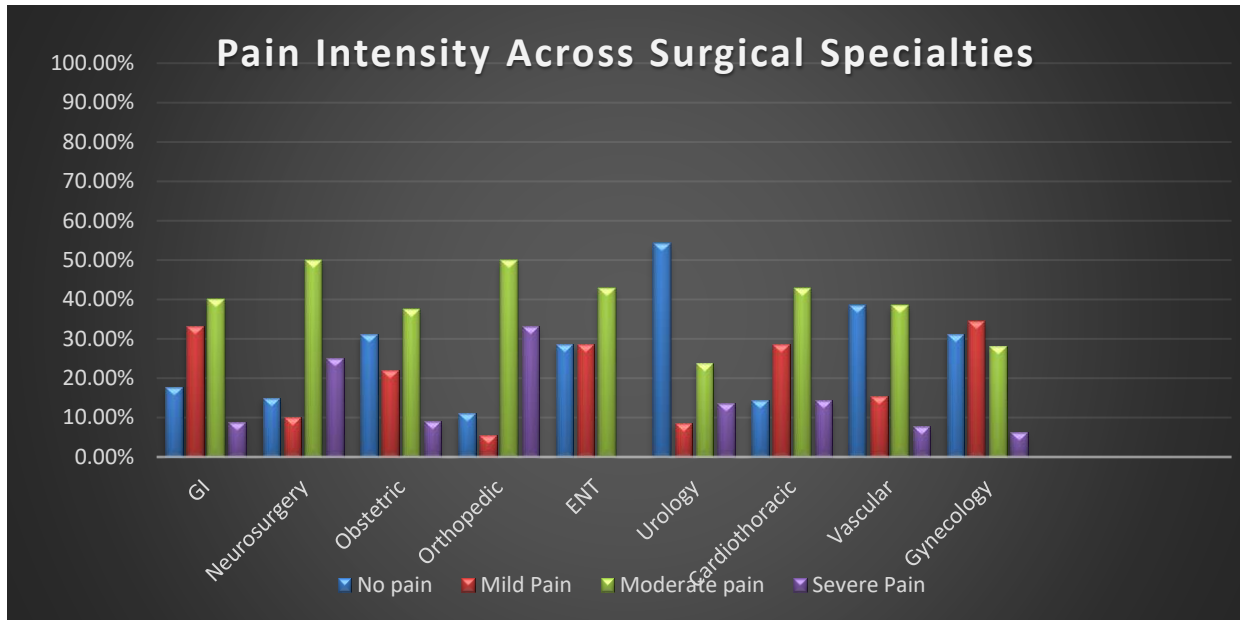


Figure 1: Pain Intensity in Different Surgical Specialties of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

One-way ANOVA with Tukey post hoc tests were done to test if there were differences in experiences of pain across different surgical specialties. There was a statistically significant difference between groups in worst pain experience ($F_{8, 326} = 4.552, p < 0.01$). Orthopedic patients had higher pain experience than GI (MD=1.96, $p=0.02$), Obstetrics (MD=2.23, $p < 0.01$), Gynecology (MD=2.64, $p < 0.01$) and Urology (MD=2.95, $p < 0.01$) patients.

Mann-Whitney U test was done to reveal the difference in pain severity between patients who used non-pharmacologic pain relief methods and those who didn't. The results showed a statistically significant difference in the mean severe pain score between the two groups ($U=10481, P < 0.01$). Pain intensity was significantly higher in the group who didn't use non-pharmacologic methods. This result indicated that use of non-pharmacologic methods might have had an effect in relieving pain. There was no statistically significant variation in pain intensity across different age groups and sex of participants.

7.4. Pain Treatment and Degree of Pain Relief

Two hundred sixty-five (79.1%) patients received opioid analgesics followed by NSAIDS (26%), PNB (24%) and PCM (5.1%) while 4.4% patients received neuraxial analgesia (figure

2). One hundred ninety-six (58.5%) of the participants received multimodal analgesia whereas the rest of them received single agent analgesia (*figure 3*). Rescue analgesia was received by 178 (53.1%) of the participants while the rest did not request additional analgesia.

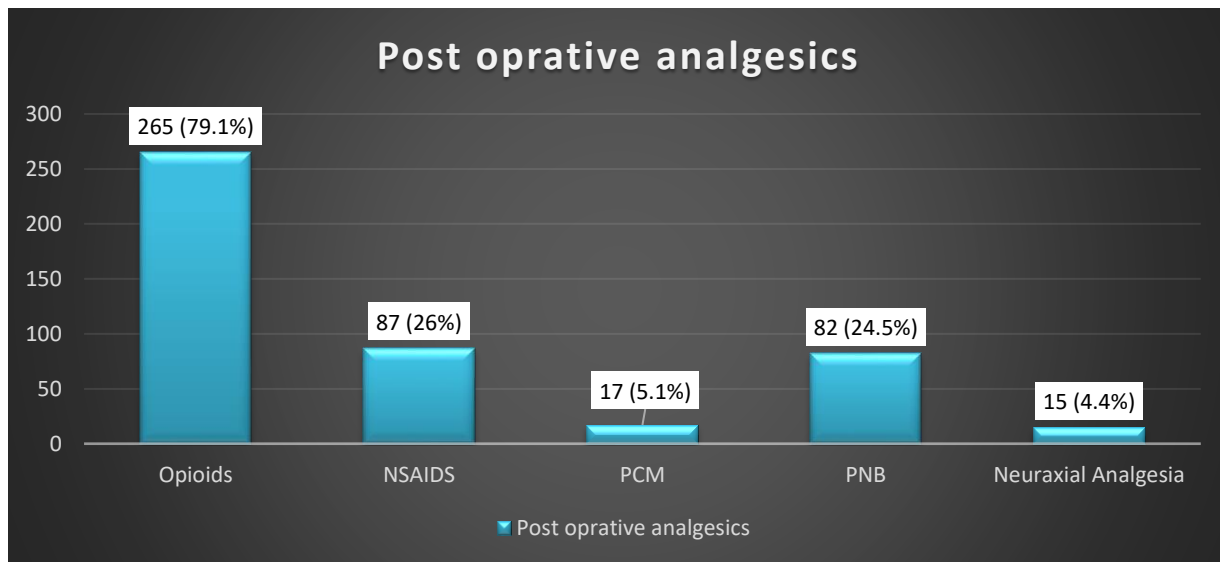


Figure 2. Analgesics Distribution of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021. (N=335)

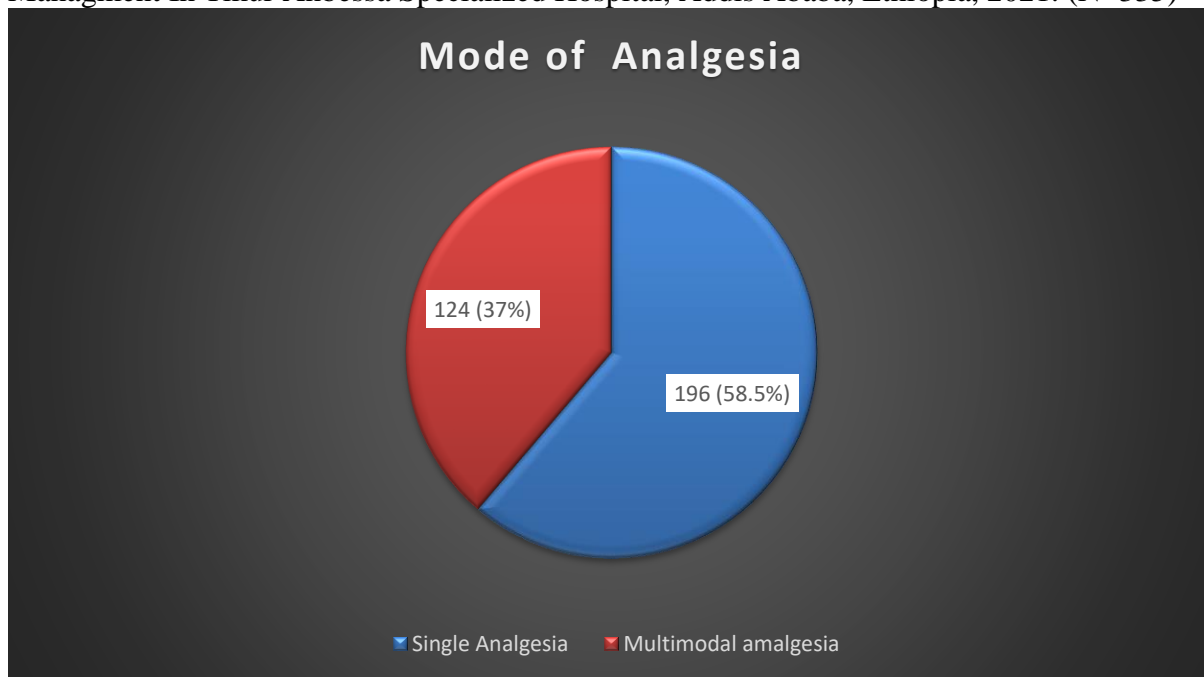


Figure 3: Mode of Analgesia Distribution of Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

In this study two-third of the participants used non-pharmacologic methods to relieve pain, while 36% did not use any non-pharmacologic methods (*figure 3*). Majority (71.9 %) of the participants were sometimes encouraged to use non-pharmacologic methods by physicians or nurses for pain

relief while 23.3% were not encouraged at all. Distribution of non-pharmacologic pain relief methods used by the study participants is shown in *Figure 5*. The mean and SD of the degree of pain relief in the first 24 hours as scored from 0-100% was 78.8 ± 18.8 .

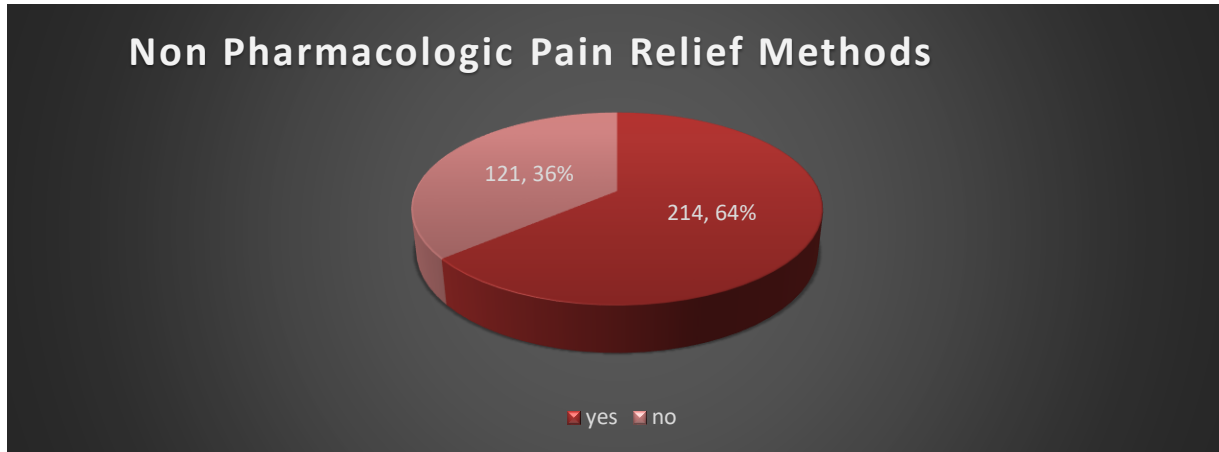


Figure 4. Frequency Distribution of Non-Pharmacologic Pain Relief Methods in Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

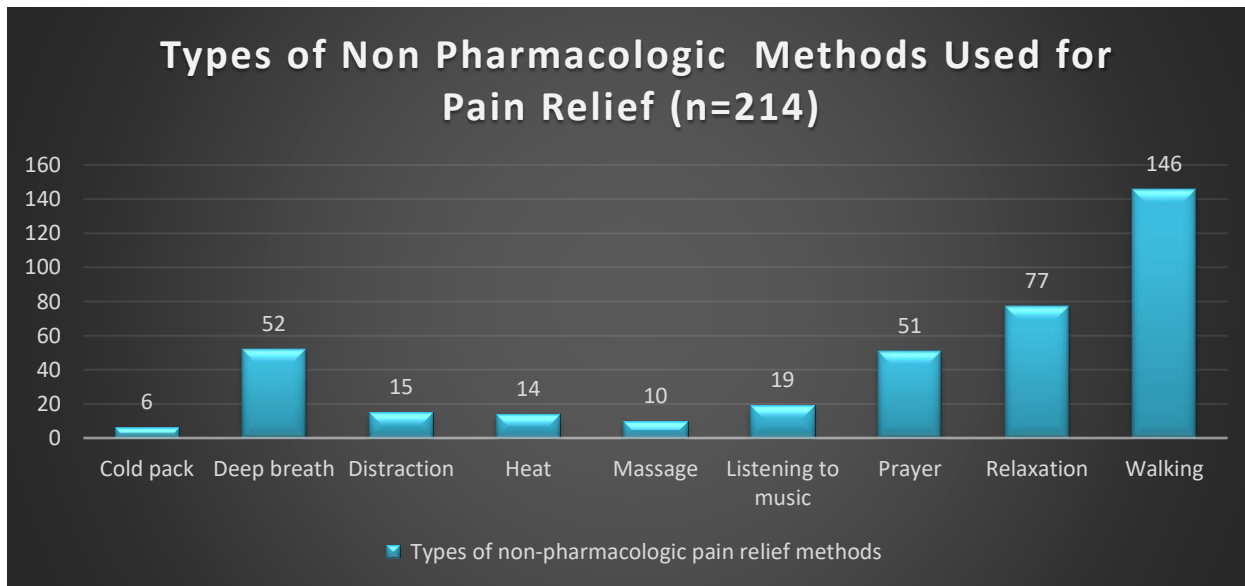


Figure 5. Distribution of Non-pharmacologic Pain Relief Methods Used by Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

7.5. Patient Satisfaction

Patients’ satisfaction with postoperative pain management was measured on a scale of 0-10 with mean of 7.13 ± 2.23 and median of 8. Gynecologic patients had the highest level of satisfaction

(71.9%) while Orthopedic patients had the lowest level of satisfaction (25%). Since the distribution of patient satisfaction was negatively skewed, level of satisfaction was dichotomized in to high and low satisfaction using the median split technique. Accordingly, the proportion of participants who had High satisfaction was found to be 57.3% (Figure 6).

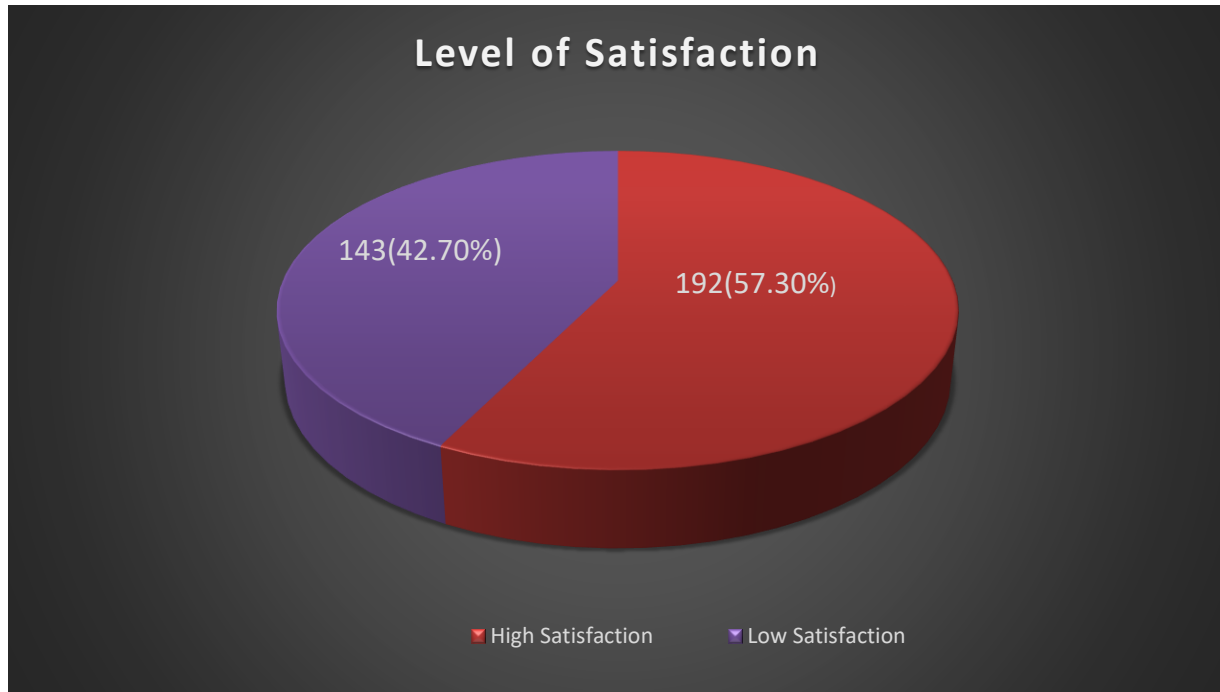


Figure 6: Level of Satisfaction of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021. (N=335)

ANOVA with Tukey post hoc test showed that there was a significant difference in the mean satisfaction score of patients among different surgical specialties ($F_{8, 326} = 2.404, p=0.016$). The mean level of satisfaction was significantly higher in Urology (7.47 ± 2.28), Obstetric (7.32 ± 2.22), and Gynecologic (7.56 ± 2.21), patients compared to orthopedic patients (5.75 ± 2.23). There was no statistically significant difference in the level of satisfaction between groups based on mode of analgesia or mode of anesthesia.

7.6. Information Related to Pain Management

There were two yes or no questions asking if patients had information about postoperative pain management. The first one asked if patients received information preoperatively while the second asked about postoperative information. The overwhelming majority (81%) of the participants did not receive any information about their post-operative treatment plan preoperatively. However, in the postoperative period, approximately 44% of the participants received information regarding the available pain management options. On a scale of 0 to 10,

helpfulness of the received information was rated as 8.5 ± 2.1 on average. Around 41.8% of the participants did not think participation in decision making about pain management was helpful at all. For the Likert question asking as to how often a nurse or a doctor encouraged them to use non-medicine methods, 241 (72%) of the participants responded sometimes, 23 % never and 5% often (Figure 8).

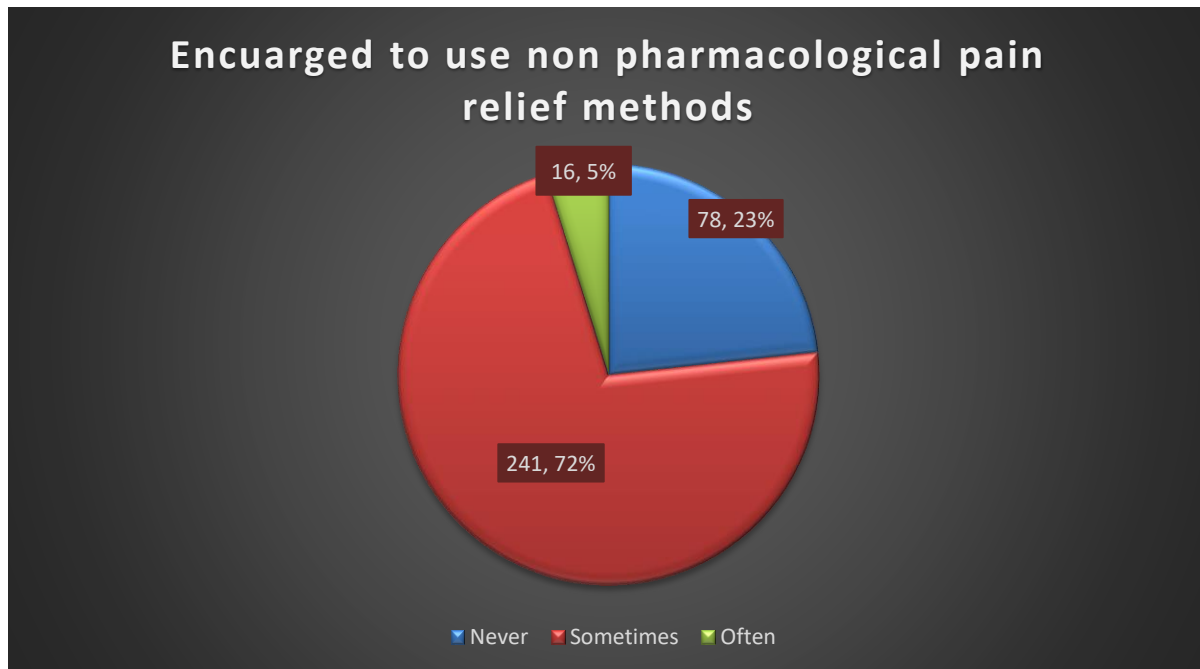


Figure 7: Encouragement of Use of Non-pharmacological pain Relief Methods by Health Care Providers of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

7.7. Predictors of Patient Satisfaction with postoperative pain management

Means and standard deviations were calculated for the scale items in the questionnaire and are displayed in the table below (Table 4). To identify the factors that predict patient satisfaction, Pearson product moment correlation was done for the continuous variables. Bivariate and multivariate binary logistic regression statistics model was used for the categorical variables.

Table 3. Means and Standard Deviations for the Continuous Items asked to Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

Variable	Score			
	Minimum	Maximum	Mean	SD
Least pain in 24 hours	0	10	1.61	1.93
Worst pain in 24 hours	0	10	3.36	2.78
Estimate of percentage of time in severe pain	0	100%	23.13	24.4
Pain interfered or prevented you from activities in bed	0	10	2.38	2.8
Pain interfered or prevented you from activities out of bed	0	10	2.3	3.02
Pain interfered or prevented you from falling asleep	0	10	1.27	2.02
How much did the pain cause you to feel anxious	0	10	0.82	2.14
How much did the pain cause you to feel depressed	0	10	0.5	1.65
How much did the pain cause you to feel frightened	0	10	0.7	1.82
How much did the pain cause you to feel helpless	0	8	0.83	1.57
Severity of nausea	0	10	0.86	1.84
Severity of drowsiness	0	10	0.48	1.45
Severity of itching	0	10	0.58	1.53
Severity of dizziness	0	9	0.95	1.85
Were you allowed to participate in decisions about pain treatment?	0	8	3.72	3.68
Pain relief in the first 24 hours	1	100%	78.8	18.8
How satisfied are you with the results of your pain treatment?	0	10	7.13	2.23

There was a moderate and significant inverse relationship between patient satisfaction and intensity of pain experience ($r=-0.367$, $p<0.01$), percentage of time spent in severe pain ($r=-0.402$, $p<0.01$) and Pain interference with activities out of bed ($r=-0.350$, $p<0.01$). Preoperative pain score, duration of surgery, interference of pain with sleep, negative emotions and adverse effects had a mild but significant inverse correlation with patient satisfaction (*Table 5*). This result indicated that, as the score of the listed factors decreases, the score of satisfaction increases and vice versa. On the other hand, Pain relief in the first 24 hours had a significant positive correlation with patient satisfaction ($r=0.427$, $P<0.01$), meaning as the score of pain relief increases so does the score of satisfaction. Factors like age, ASA physical status, NPO time had no relationship with level of patient satisfaction.

Table 4: Correlation of Continuous Items with Satisfaction of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

List of independent variables	Satisfaction with pain management (N=335)	
	Correlation coefficient	P -value
Age	-0.001	0.991
BMI	0.029	0.656
Education	0.094	0.084
Preoperative pain in NRS	-0.174	0.001
ASA class	0.054	0.324
Surgery duration	-0.136	0.013
Preoperative fasting duration	-0.048	0.378
Least pain in 24 hours	-0.367	0.000
Worst pain in 24 hours	-0.367	0.000
Percentage of time spent in severe pain	-0.402	0.000
Pain interfered or prevented you from activities in bed	-0.262	0.000
Pain interfered or prevented you from activities out of bed	-0.350	0.000
Pain interfered or prevented you from falling asleep	-0.237	0.000
How much the pain caused you to feel anxious	-0.167	0.002
How much the pain caused you to feel depressed	-0.187	0.001
How much the pain caused you to feel frightened	-0.212	0.000
How much the pain caused you to feel helpless	-0.148	0.007
Severity of nausea	-0.120	0.029
Severity of drowsiness	-0.141	0.01
Severity of itching	-0.143	0.009
Severity of dizziness	-0.144	0.008
Pain relief in the first 24 hour	0.427	0.000
Participate in decisions about pain treatment	-0.034	0.536

Association of participants` categorical independent variables with satisfaction were examined using Bivariate and multivariate Binary logistic regression model, and strengths of relationships were quantified using Odds Ratio (OR) and 95% confidence interval. Accordingly, level of education, preoperative pain, rescue analgesia, use of non-pharmacological pain relief methods, least and worst pain in 24 hours had association with satisfaction with post-operative pain

management using the bivariate binary logistic regression model. After adjusting for confounders, sex, level of education, preoperative pain, least pain on 24 hours and use of non-pharmacological pain relief methods were found to be significantly associated with satisfaction in the multivariate analysis.

The result of multivariate binary logistic regression indicated that, females were 1.8 times more likely to be satisfied with postoperative pain management than males (AOR=1.8, 95%CI=1.03, 3.20) and participants who had education level of more than secondary had a 2.9-fold increase in satisfaction with postoperative pain management than non-educated (AOR=2.9, 95%CI=1.04, 8.40). Participants who used non-pharmacological pain relief methods were 2.1 times more likely to be satisfied than those who didn't (AOR=2.1, 95%CI=1.16, 3.75).

On the other hand, participants who experienced severe and moderate pain as their least pain in the 24 hours of surgery were less likely to be satisfied with postoperative pain managements by 94% and 91% respectively (*Table 6*). Information related items did not have significant association with satisfaction.

Table 5. The Bivariate and Multivariate Binary Logistic Regression of Independent and Dependent Variables of Postoperative Surgical Patients who Received Pain Management In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2021.

Variable	Level of Satisfaction		COR (95% CI)	AOR (95% CI)
	High satisfaction	Low satisfaction		
Sex of participants				
Male	60(51.3%)	57(48.7%)	1	1 ^b
Female	132(60.6%)	86(39.4%)	1.4(0.91, 2.24)	1.81(1.03, 3.20)
Level of education				
No education	25(49%)	26(51%)	1 ^a	1 ^b
Primary	54(56.8%)	41(43.2%)	1.4(0.69, 2.71)	1.3(0.58, 3.13)
Secondary	78(55.7%)	62(44.3%)	1.3(0.69, 2.49)	1.7(0.83, 4.16)
Above secondary	35(71.4%)	14(28.6%)	2.6(1.14, 5.95)	2.9(1.04, 8.40)
Preoperative pain				
Yes	72(48.3%)	77(51.7%)	1 ^a	1
No	120(64.5%)	66(35.5%)	1.9(1.25, 3.1)	0.98(0.04, 23.2)
Level of preoperative pain				
No Pain	119(64.7%)	65(35.3%)	1 ^a	1
Mild Pain	19(62%)	14(42.4%)	0.74(0.35, 1.56)	0.85(0.03, 22.67)
Moderate Pain	36(61%)	23(39%)	0.86(0.47, 1.56)	0.81(0.03, 20.64)
Severe Pain	18(30.5%)	41(69.5%)	0.24(0.13, 0.45)	0.28(0.01, 6.1)
Mode of anesthesia				
General	76(52.1%)	70(47.9%)	1	1
Central neuraxial	116(61.4%)	73(38.6%)	1.5(.95, 2.27)	1.48(0.83, 2.62)
Rescue analgesia				
Yes	117(65.7%)	61(34.3%)	2.1(1.35, 3.26)	1.2(0.69, 2.17)
No	75(47.8%)	82(52.2%)	1 ^a	1
Use of nonpharmacological pain relief methods				
Yes	137(64%)	77(36%)	2.1(1.37, 3.36)	2.1(1.16, 3.75)
No	55(45.5%)	66(54.5%)	1 ^a	
Least pain in 24 hours				
No Pain	90(78.9%)	24(21.1%)	1 ^a	1 ^b
Mild Pain	97(56.4%)	75(43.6%)	0.35(0.20, 0.59)	0.51(0.19, 1.37)
Moderate	4(10.3%)	35(89.7%)	0.03(.01, 0.094)	0.09(.019, 0.39)
Severe Pain	1(10%)	9(90%)	0.039(.004, 0.25)	0.04(.003, 0.49)
Worst pain in 24 hours				
No Pain	79(79%)	21(21%)	1 ^a	1
Mild Pain	53(79.1%)	14(20.9%)	1.06(0.47, 2.15)	2.16(0.69, 6.63)
Moderate	53(42.7%)	71(57.3%)	0.19(0.11, 0.36)	0.47(0.16, 1.37)
Severe Pain	7(15.9%)	37(84.1%)	0.05(0.02, 0.13)	0.29(0.07, 1.21)

*= P value < 0.05, **= P < 0.001, ^a= significant from bivariate logistic regression model, and

^b= significant from multivariate logistic regression model.

8. Discussion

Previous studies showed that level of patient satisfaction with pain management tends to be skewed towards the positive regardless of the intensity of the pain experience. On the other hand, other studies indicated, satisfaction is directly related to degree of pain relief obtained from pain management.

In the current study, the level of satisfaction of participants with postoperative pain management was significantly skewed to the left. The median satisfaction score was 8 and the mean was 7.13. The overall proportion of participants who had high satisfaction was 57.3%. This result was low compared to other similar studies done in post-operative surgical patients.^{13,14,17,28,29} The reason for this lower rate of satisfaction in this study may be explained by the presence of high rate of preoperative pain, severity of pain intensity in 24 hours, and the high percentage of time spent in severe pain observed in this study.

On the other hand, the finding in this study was slightly higher than the result of a study done in Jimma, which showed that the overall proportion of patients satisfaction to be 50%.¹¹ Some of the reasons mentioned for the relatively lower satisfaction in the Jimma study were, the fact that majority of the participants reported they had not received pain management education which led them to lesser satisfaction, overlooking of clinicians to patients' requests and the almost nil encouragement on use of non-pharmacological methods.

Comparison of satisfaction level based on surgical specialty showed, Orthopedic patients had a lower satisfaction score than Obstetrics, Gynecology and Urology patients. This finding was similar with a research done in Hong Kong.¹² The reason for this could be explained by the higher incidence of pain reported by Orthopedic patients, since the comparison of pain intensity based on surgical specialty showed Orthopedic patients had a higher pain score than Obstetrics, Gynecology and Urology patients.

In this study, female sex was found to increase the level of satisfaction significantly. Contrary to this, being female was stated as a risk factor for dissatisfaction in other studies.^{11,12,20,21,23} The reason stated for this finding in the respective studies was, females were more socially acceptable to express pain and dissatisfaction. The sociocultural differences across countries may have led females in this study to behave in a socially acceptable manner by playing the humble patient's role.

Another interesting finding in this research was the presence of a negative correlation between severity of perceived pain and rate of satisfaction. Here the higher the pain intensity, the lower

the rate of satisfaction. But a paradoxical high satisfaction despite high pain intensity was observed in many researches done in developing and developed countries.^{11,22,30} The main reasons identified by most studies for higher rate of satisfaction despite the presence of high pain intensity were the exceptionally good caring attitude of health care professionals, presence of frequent pain assessment, high rate of preoperative pain education, and presence of good communication environment.^{26,28,31} On the other hand Pain relief in the first 24 hours had a significant moderate positive correlation with patient satisfaction which is a similar finding as other similar studies.^{14,17,29,32} In this study majority (81%) of the participants did not receive any information regarding pain management preoperatively. An overwhelming majority of participants also reported that they did not receive any information about the available treatment modalities. These results showed that there was poor communication between health care providers and patients. Together with the higher intensity of post-operative pain, this might have contributed to the low rate of satisfaction observed in this study. Since attitude of health care professionals was not assessed in this research, it is difficult to identify its effect on level of satisfaction.

Severity of nausea, drowsiness, itching and dizziness had significant negative correlation with patient satisfaction. On the contrary, the severity of these adverse events was found to be positively correlated in the USA study even though the number of participants who had adverse events were low and it contributed less to the overall prediction model.¹⁴ Higher scores on such negative emotions as pain causing patients to feel anxious, depressed, frightened, and helpless, were negatively correlated with patient satisfaction. Patients who spent less time in severe pain reported fewer negative emotions. This finding was similar with the finding of a research done in the USA.¹⁴ This finding explains the fact that satisfaction is a combination of complex emotions and that are experienced beyond the realms of pain free period.

Participants who used non-pharmacological pain relief methods were two times more likely to be satisfied than those who didn't (AOR=2.1, 95% CI=1.16, 3.75) (P< 0.05). In this study 63.9% of the participants used non-pharmacological methods to relieve pain. And 71.9 % of them were sometimes encouraged to use no-pharmacologic methods by physicians or nurses. This is a higher number compared to other similar studies.^{14,17,33} The common non-pharmacological methods used by participants to relief pain were walking, relaxation, deep breath, and prayers. Whereas distraction, deep breathing, and praying were used by patients in a Turkish study. African-Americans also reported use of passive pain-coping strategies, distraction, and praying

to a higher degree.³⁴ Distraction methods, were used by Anglo American and Danish patients whereas Salves, oils, and massage, were used by Chinese patients.³⁵ However, the use of music, guided imagery, prayer by others, and other sophisticated methods which are commonly used by USA, Hispanic and Canadian samples were not used by the participants in this study.^{31,34,36} The reason for the increase in rate of satisfaction in these groups of participants may be explained by the degree of pain relief that patients experienced from using different pain treatment methods. Therefore, the healthcare providers must continue to advise and provide appropriate non-medicine methods to the patient.

9. Strength and Limitation of the Study

9.1. Strength

A relatively large number of individuals participated in this study for a more representative group of people with the maximum possible sample size. The study used a standard assessment tool to collect data after confirming the reliability.

9.2. Limitations

There are several limitations in this study. Although sample size is fairly large, this study used total enumeration sampling to select samples. This may have compromised the representativeness of the samples. Study participants were adult elective inpatients and results may not be applicable to pediatrics, outpatient or emergency surgical patients' settings. This study did not focus on assessing the pattern of pain management rather it focused on the outcome of acute pain treatment in terms of patient satisfaction. The study relied on patients' ability to recall and report their pain perceptions during a time of recovery. This might have introduced recall bias in to the results. Due to the nature of the study design, the level of satisfaction was recorded only at one point in time and trends of measurements were not done to see the change in satisfaction over time. Finally, the study relied on self-reported satisfaction from the patients which is highly subjective to social desirability bias, as patients might have given responses that would make them labeled as the humble patient instead of true reflection of their satisfaction.

10. Conclusion and Recommendation

10.1. Conclusion

Patient satisfaction has become a widely accepted outcome measure in the acute pain management setting. Acute pain management continues to be problematic, despite growing efforts to improve the care. According to the finding of this study, the satisfaction of patients with postoperative pain management is remarkably low compared to other studies. This finding reflects negatively on the quality of pain management provided to postoperative patients. The presence of preoperative pain and prevalence of high degree of postoperative pain are some of the important factors that determine patient satisfaction in this study setting. Use of non-pharmacologic pain relief method was found to be quite helpful in these patients in controlling their pain and thereby improving their satisfaction. On the other hand, rate of information

provision regarding patients' pain management, both preoperatively and postoperatively, was very low. Seeing as it was rated to be so helpful by those who received it, rate of information provision is something that requires substantial improvement in future practice.

10.2. Recommendation

With the aim of reducing the incidence and severity of postoperative pain, preoperative visits by anesthesia providers must focus on helping patients understand how to communicate severity of pain and what to expect in the post-operative period to enhance comfort, reduce occurrence of negative emotions and improve satisfaction. Preoperative visits must also incorporate the assessment of the presence of pain prior to procedure and treating the pain. The presence of preoperative history of pain should be documented in clearly defined terms. Explanations of pain rating scales, various descriptive words for communicating pain, and advise on use of nonpharmacological methods should also be part of the preoperative visit. Similarly, in the postoperative period, timely assessment of pain score, provision of standing doses of analgesia and encouraging patients to report pain whenever they feel it should be part of the management of these patients with proper documentation of information in patient charts. Because in the end a properly addressed pain is an important factor to improve patient satisfaction as clearly indicated in this research. It is also recommended to conduct further researches to address the issue of patient satisfaction with pain management in other clinical settings like pediatric age group, emergency surgery and chronic pain.

11. References

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Part I

Socio demographic Characteristics

- 1. Sex M F
- 2. Age_____
- 3. BMI,
- 4. Level of education.

Preoperative Factors.

- 5. History of previous surgery, Yes_____ No_____
- 6. Preoperative pain Yes_____ No_____
- 7. If yes, level of preoperative pain NRS _____
- 8. treatment and previous side effects of pain medication,
- 9. preoperative information of postoperative pain management, Yes_____ No

- 10. If yes, what
information_____
- 11. ASA Class _____

Surgical Related Factors.

- 12. Site of surgery _____
- 13. Type of surgery,
A. GI B. Neurosurgery C. Obstetric D. Orthopedics E. ENT F. Others, specify
- 14. Mode of anesthesia,
A. GA B. Central Neuraxial C. PNB D. Others, specify
- 15. Mode of Analgesia
A. Opioids B. NSAIDS C. PCM D. PNB E. Others, Specify
- 16. Rescue Analgesia
A. Yes (Please specify) B. No
- 17. Duration of surgery_____
- 18. Preoperative NPO time_____

d. Staying asleep

0 1 2 3 4 5 6 7 8 9 10
Does not interfere Completely
interferes

5. Pain can affect our mood and emotions. On this scale, please circle the one number that best shows how much the pain caused you to feel:

a. Anxious 0 1 2 3 4 5 6 7 8 9 10
Not at all Extremely

b. Depressed 0 1 2 3 4 5 6 7 8 9 10
Not at all Extremely

c. Frightened 0 1 2 3 4 5 6 7 8 9 10
Not at all Extremely

d. d. Helpless 0 1 2 3 4 5 6 7 8 9 10
Not at all Extremely

6. Have you had any of the following side effects? Please circle "0" if no; if yes, please circle the one number that best shows the severity of each:

a. Nausea 0 1 2 3 4 5 6 7 8 9 10
None Severe

b. Drowsiness 0 1 2 3 4 5 6 7 8 9 10
None Severe

c. Itching 0 1 2 3 4 5 6 7 8 9 10
None Severe

d. Dizziness 0 1 2 3 4 5 6 7 8 9 10
None Severe

7. In the first hour, how much pain relief did you receive? Please circle the one percentage that best shows how much relief you have received all of your pain treatments combined (medicine and non medicine treatments)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
No relief Complete relief

8. Were you allowed to participate in decisions about your pain treatment as much as you wanted to?

0 1 2 3 4 5 6 7 8 9 10
Not at all Very much so

9. Circle the one number that best shows how satisfied you are with the results of your pain treatment while in the hospital.

0 1 2 3 4 5 6 7 8 9 10
Extremely dissatisfied Extremely satisfied

10. Did you receive any information about your pain treatment options? ___No ___Yes

If yes please circle the number that best shows how helpful the information was

0 1 2 3 4 5 6 7 8 9 10
Not at all helpful Extremely helpful

11. Did you use any non medicine methods to relieve your pain? _____No _____Yes,

if yes check all that applies

- | | |
|--|-----------------------|
| _____ Cold pack | _____ Listen to music |
| _____ Deep breath | _____ Prayer |
| _____ Distraction (such as reading, talking with family) | _____ Relaxation |
| _____ Heat | _____ Walking |
| _____ Massage | |
| _____ Other, please describe _____ | |

12. How often did a nurse or a doctor encourage you to use non- medication methods?

_____Never _____Sometimes _____Often

12.2. Amharic Questionnaire

ሰላም, ስሜ _____ ይባላል ይህንን መረጃ የምሰበሰበው በአዲስ አበባ ዩኒቨርሲቲ በህክምና ትምህርት ቤት በአንስቴዎሎጂ፣ ክሪቲካል ኬር እና ፔይን ሜድስን ትምህርት ክፍል የመጨረሻ አመት ሬዚደንት እንደሆነችው እንደ ዶ/ር ኑራ ከድር ሆኖ ነው። እሷ በአሁኑ ጊዜ “በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል በቀጠሮ የቀዶ ህክምና የሚደረግላቸው አዋቂ ታካሚዎች የድህረ ቀዶ ህክምና የህመም ማስታገስ ህክምናን በተመለከተ ያላቸው እርካታ ምን ያክል ነው?” በሚል ርዕስ ጥናትና ምርምር በማድረግ ላይ ትገኛለች። ከአዲስ አበባ ዩኒቨርሲቲ በህክምና ትምህርት ቤት በአንስቴዎሎጂ፣ ክሪቲካል ኬር እና ፔይን ሜድስን ትምህርት ክፍል ጥናቱን ለማከናወን ፈቃድ አግኝታለች።

እርስዎ በዚህ ጥናት ውስጥ እንዲሳተፉ የተመረጡት በዚህ ሆስፒታል በቀጠሮ የሚደረግ ቀዶ ህክምና ታካሚ ደንበኛ በመሆንዎ ምክንያት ነው። በዚህ ጥናት ውስጥ የሚኖርዎት ተሳትፎ በፈቃደኝነትዎ ላይ ብቻ የተመሰረተ ነው። በዚህ ጥናት ውስጥ ያለመሳተፍ መብትዎ የተጠበቀ ነው። ምንም አይነት ምክንያት መስጠት ሳያስፈልግዎት በማንኛውም ጊዜ ተሳትፎዎን ማቋረጥ ወይም ማቆም ይችላሉ። በማቆምዎ ምክንያትም የሚደርስብዎት ምንም አይነት ጉዳት አይኖርም። በዚህ ጥናትና ምርምር ውስጥ ተሳትፎ ከማድረግ የሚገኝ ቀጥተኛ ጥቅም ባይኖርም በቀጣይ በዚህ ጥናት የሚሰበሰበው መረጃ ግን ፖሊሲ አውጭዎች፣ የፕሮግራም ሰራተኞች እና ተመራማሪዎች ለድህረ ቀዶ ህክምና የህመም ማስታገስ ህክምና ተገቢውን ትኩረት እንዲሰጡ የሚያግዛቸው ይሆናል።

እርስዎ የሚሰጡት መረጃ መለያ ቁጥር በመስጠት ብቻ እና መረጃውን ሌላ ሰው እንዳያገኘው በሚስጥራዊ ቁልፍ በማስቀመጥ ሚስጥራዊነቱ ተጠብቆ የሚቀመጥ ይሆናል። መለያ ያልተሰጣቸውን መረጃዎች ማግኘት የሚችሉት የጥናትና ምርምሩ አባል የሆኑት ብቻ ሲሆን መረጃውም ከጥናቱ በስተቀር ለሌላ አላማ አይውልም። የእርስዎ ፈቃደኝነት እና ንቁ ተሳትፎ ለዚህ ጥናት ስኬታማነት በጣም አስፈላጊ ነው።

ከላይ ያለውን መረጃ ተገንዝበው በዚህ ጥናት ውስጥ ለመሳተፍ ፈቃደኛ ነዎት ?

_____ አዎን _____ አይ

አዎን ከሆነ

ፊርማ _____ ቀን _____

የመረጃ ሰብሳቢው ስም _____ ፊርማ _____

የመጠይቁ መታወቂያ

መረጃው የተሰበሰበበት ቀን _____

የድህረ- ቀዶ ህክምና የህመም እና የእርካታ ግብ ነጥብ

1. በዚህ መለኪያ ከቀዶ ህክምና በኋላ ባሉት የመጀመሪያዎቹ 24 ሰዓታት ውስጥ የነበረብዎትን በጣም አነስተኛ የህመም ስሜት ያመለክቱ :

0	1	2	3	4	5	6	7	8	9	10
ምንም የህመም						እጅግ በጣም ከፍተኛ				
ስሜት አልነበረም						የህመም ስሜት				

2. በዚህ መለኪያ ከቀዶ ህክምና በኋላ ባሉት በመጀመሪያዎቹ 24 ሰዓታት ውስጥ የነበረብዎትን እጅግ በጣም ከፍተኛ የህመም ስሜት ያመለክቱ:

0	1	2	3	4	5	6	7	8	9	10
ምንም የህመም						እጅግ በጣም ከፍተኛ				
ስሜት አልነበረም						የህመም ስሜት				

3. ባለፉት 24 ሰዓት ውስጥ ለምን ያህል ጊዜ በከፍተኛ የህመም ስሜት ውስጥ ነበሩ? ከፍተኛ የህመም ስሜት የተሰማዎትን ጊዜ ይበልጥ የሚቀራረበውን ግምትዎ ላይ በመክበብ በፐርሰንት (%) ያሳዩ

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ፊጽሞ ከፍተኛ የህመም						ዘወትር ከፍተኛ				
ስሜት ውስጥ አልነበርኩም						ህመም ነበረብኝ				

4. በህመም ምክንያት የሚከተሉትን ተግባራት እንዳያከናውኑ ምን ያክል እንደተሰናከሉ የሚገልጹን ቁጥር በመክበብ ያሳዩ:

ሀ) በመኝታ ላይ እንደ መገላበጥ፣ ቀና ብሎ መቀመጥ፣ የመኝታ አቅጣጫን መቀየር የመሳሰሉትን ማከናወን

0	1	2	3	4	5	6	7	8	9	10
ምንም አላገደኝም						ሙሉ በሙሉ አግዶኛል				

ለ) ከመኝታ ውጭ የሆኑትን እንደ መራመድ፣ በወንበር ላይ መቀመጥ፣ በሲንክ ላይ መቆምን የመሳሰሉትን ተግባራት

0	1	2	3	4	5	6	7	8	9	10
ምንም አላገደኝም						ሙሉ በሙሉ አግዶኛል				

ሐ) እንቅልፍ መተኛት

0 1 2 3 4 5 6 7 8 9 10

ምንም አላገደኝም

ሙሉ በሙሉ አግዶኛል

መ) በእንቅልፍ ላይ መቆየት

0 1 2 3 4 5 6 7 8 9 10

ምንም አላገደኝም

ሙሉ በሙሉ አግዶኛል

5. ህመም በአኳኋናችን እና በስሜቶቻችን ላይ ተጽዕኖ ሊያሳድር ይችላል። በዚህ መለኪያ ህመም ምን ያክል ስሜትዎ ላይ ተጽዕኖ እንዳሳደረ ይበልጥ የሚያሳየውን ቁጥር በመክበብ ያሳዩ።

ሀ). ጭንቀት

0 1 2 3 4 5 6 7 8 9 10

ፈጽሞ አልነበረውም

እጅግ በጣም ከፍተኛ

ለ. ድባቴ /መደበት

0 1 2 3 4 5 6 7 8 9 10

ፈጽሞ አልነበረውም

እጅግ በጣም ከፍተኛ

ሐ) የፍርሃት ስሜት

0 1 2 3 4 5 6 7 8 9 10

ፈጽሞ አልነበረውም

እጅግ በጣም ከፍተኛ

መ) አጋዥ አልባነት /አቅመቤት

0 1 2 3 4 5 6 7 8 9 10

ፈጽሞ አልነበረውም

እጅግ በጣም ከፍተኛ

6. ከሚከተሉት የጎንጎ ጉዳቶች ውስጥ ደርሶብዎት የሚያውቅ አለ? እባክዎን መልስዎ የለም ከሆነ “0”; አለ ከሆነ, የእያንዳንዱን ክብደት ይበልጥ የሚያሳየውን አንዱን ቁጥር በመክበብ ያሳዩ:

ሀ) የማቅለሽለሽ ስሜት

0 1 2 3 4 5 6 7 8 9 10

የለውም

ከፍተኛ

ለ) የመጫጫን/ እንቅልፍ እንቅልፍ የሚል ስሜት

0 1 2 3 4 5 6 7 8 9 10

የለውም

ከፍተኛ

ሐ) ማሳከክ

0 1 2 3 4 5 6 7 8 9 10

የለውም

ከፍተኛ

መ) ራስ ማዞር

0 1 2 3 4 5 6 7 8 9 10

የለውም

ከፍተኛ

7. የቀዶ ህክምናን ተከትሎ የተደረገልዎት ህመምን የማስታገስ ህክምና በመጀመሪያው ሰዓት ላይ ምን ያህል የህመም ስቃይን አስታገሰልዎት? የተደረገልዎት ህመምን የማስታገስ ህክምና አንድ ላይ ተቀናጅቶ ምን ያክል እንዳስታገሰልዎት ይበልጥ የሚያሳየው አንዱን በፐርሰንት (%) በመክበብ ያመልክቱ

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

ምንም

አላስታገሰልኝም

ሙሉ በሙሉ

አስታግሰልኛል

8. ስለ ህመምዎ ህክምናን በተመለከተ በሚደረገው የውሳኔ አሰጣጥ ውስጥ የሚፈልጉትን ያክል እንዲሳተፉ ተፈቅዶልዎት ነበር?

0 1 2 3 4 5 6 7 8 9 10

በፍጹም

በጣም ብዙ ተሳትፎ

እንዳደርግ ተፈቅዶልኛል

9. በሆስፒታል በነበሩበት ወቅት ስለተደረገልዎት ህመምዎን የማስታገስ ህክምና ውጤት ምን ያክል እደረኩበት ይበልጥ የሚያሳየን አንዱን ቁጥር በመክበብ ያሳዩ::

0 1 2 3 4 5 6 7 8 9 10

እጅግ በጣም

እጅግ በጣም

አልረከውም

ረከቻለሁ

10. ሊኖሩ ስለሚችሉ የህመም ማስታገስ ህክምና አማራጮችን በተመለከተ መረጃ አግኝተዋል? ___ አይ ___ አዎን

አዎን ከሆነ መረጃው ምን ያክል ጠቃሚ እንደነበረ ይበልጥ የሚያሳየውን አንዱን ቁጥር በመክበብ ያሳዩ

0 1 2 3 4 5 6 7 8 9 10

በፍጹም ጠቃሚ አይደለም

እጅግ በጣም ጠቃሚ ነበር

11. ህመምዎን ለማስታገስ በሐኪም ከታዘዘልዎት መድኃኒት ውጪ ሌሎች ዘዴዎችን ተጠቅመው ያውቃሉ? _____ አይ _____ አዎን

አዎን ከሆነ የሚመለከተውን በሙሉ ምልክት በማድረግ ያሳዩ

_____ በረዶ

_____ በረጅሙ (በጥልቀት) መተንፈስ

_____ ራስን በሌላ ተግባራት ማዘናጋት (እንደ ማንበብ፣ ከቤተሰብ ጋር መጫወት ወዘተ ያሉ)

_____ ሙቀት መጠቀም

_____ መታሻ (ማሳጅ) መጠቀም

_____ ሙዚቃ ማዳመጥ

_____ ፀሎት

_____ ራስን ዘና ማድረግ (ሰውነትን ማፍታታት)

_____ የእግር ጉዞ ማድረግ

_____ እባክዎ ሌላ ካለዎት ይጥቀሱ_____

12. ነርስ ወይም ዶክተር መድኃኒት ያልሆኑ የህክምና ዘዴዎችን እንዲጠቀሙ ለምን ያህል ጊዜ አበረታተዎት ያውቃሉ?

_____ በፍጹም

_____ አንዳንድ ጊዜ/ አልፎ አልፎ

_____ ብዙ ጊዜ