JIMMAUNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF SURGERY

SATISFACTION ON POSTOPERATIVE PAIN MANAGEMENT AND ASSOCIATED FACTORS AMONG PATIENTS UNDERGOING ABDOMINAL SURGERY AT JIMMA MEDICAL CENTER2022; A PROSPECTIVE CROSS-SECTIONAL STUDY

JIMMA, SOUTHWEST ETHIOPIA

BY:

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A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF SURGERY, COLLEGE OF MEDICINE AND HEALTH SCIENCE, JIMMA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE SPECIALITY IN GENERAL SURGERY

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Full title of the research	SATISFACTION ON POSTOPERATIVE PAIN MANAGEMENT AND ASSOCIATED FACTORS AMONG PATIENTS UNDERGOING ABDOMINAL SURGERY AT JIMMA MEDICAL CENTER, SOUTHWEST ETHIOPIA
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Declaration

This is to certify that the thesis entitled “Satisfaction on Postoperative Pain Management and Associated Factors among Patients Undergoing Abdominal Surgery at Jimma medical center, Jimma, Ethiopia”, which is submitted in partial fulfillment of the requirements for the specialty in General Surgery of Department of SURGERY, Jimma University. It is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been duly acknowledged.

Dr. Dawit Teka _____ _____

Name of the candidate *Date* *Place*

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Approval of thesis for defense

I hereby certify that I have supervised, read, and evaluated this thesis/dissertation titled "Satisfaction On Postoperative Pain Management and Associated Factors Among Patients Undergoing Abdominal Surgery at Jimma medical center, Jimma, Ethiopia'', prepared under my guidance. I recommend the thesis/dissertation to be submitted for oral defense.

1. Dr. ASHENAFI KASAYE _____ _____

   Advisor's name Signature Date

2. Dr. GEMECHU LAMI _____ _____

   Advisor's name Signature Date

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ABSTRACT

BACKGROUND: Pain is an unpleasant sensory associated with actual/potential tissue damage. Pain has been recognized as a global health problem and postoperative pain is classified as a serious public health problem in both developed and developing countries. Findings from studies suggested that post-operative pain were not effectively managed. Patients' satisfaction on pain management is the most relevant criteria of clinical success. This study aimed to assess satisfaction on postoperative pain management and associated factors among patients undergoing abdominal surgery at Jimma medical center, Jimma, Southwest Ethiopia in 2022

Method: Institutional based prospective cross-sectional study was conducted in Jimma medical center from September 1 to October 31, 2022. All patients whose age ≥15 years undergo abdominal surgery at JMC during study period and able to communicate were included in the study. For those less than 18 years age, consent taken from family. About 149 patients undergo abdominal surgery at JMC were included in the study. Data entered in Epi Data version 4.6.0, and exported to SPSS version 25 for analysis. Descriptive statistics like frequency tables and charts were used to describe the variables, and logistic regression analysis was performed. Those variables at Binary logistic regression with p-value<0.2 were moved to multivariable logistic regression model and finally Adjusted Odds Ratio with 95%CI and P-value <0.05 declared as statistically significant.

Result: It is 149 patients' who undergo abdominal surgery investigated in this study; the majorities were females and rural dwellers. The study showed 60.4 % of patients were satisfied with pain management. Illiterate (AOR: 0.21; 95% CI: 0.06, 0.70), anesthesia type (AOR: 4.09; 95% CI (1.41, 11.89); asked medication for their pain (AOR: 0.12; 95% CI: 0.04, 0.32), previous chronic pain (AOR: 0.16; 95% CI: 0. 06, 0.44), advised preoperatively on POP (AOR: 3.39; 95% CI (1.23, 9.33) and bleeding amount (AOR: 0.04; 95% CI: 0. 01, 0.19) were factors significantly associated with patient satisfaction.

Conclusion: The study found that 60.4 % of patients were satisfied with post-operative pain management. The study found that being an illiterate asked medication for their pain, had previous chronic pain, bleeding amount and advised preoperatively on postoperative pain were significantly associated with abdominal surgery outcome.

Key words: Satisfaction, Abdominal surgery and post-operative pain

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ASA	American Society of Anesthesiology
ETB	Ethiopian Birr
GA	General Anesthesia
Hrs.	Hours
IRB	Institute of review board
JMC	Jimma medical center
JU	Jimma University
NRS	Numerical rating scale
POP	Postoperative Pain
SA	Spinal Anesthesia
USA	United States of America
VAS	Verbal analog scale
WHO	World Health Organization

1. INTRODUCTION

1.1. Background of the Study

The World Health Organization (WHO) defines pain as “an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (1). Pain is the result of a complex interplay between signaling systems, modulation from higher centers and the unique perception of the individual (2). Postoperative pain (POP) is the type of acute pain that is present in a surgical patient because of a preexisting surgical procedure like skin incision, tissue dissection, manipulation and traction, or a combination of disease-related and procedure-related resources (3, 4). The incidence of pain reaches 95.2% and 80.1% is under treated (5).

Satisfaction is a general psychological condition that results from emotional surrounding expectations coupled with the prior feeling of consumers toward the consumption experience (6). Patient’s satisfaction in pain management is one of the variables that affect the outcomes of health care services (7, 8).

1.2. Statement of problem

Pain has been recognized as a global health problem, and postoperative pain is classified as a serious public health problem both in the developed and in developing countries (9). Poorly controlled POP subjects to complications that may be fatal or lead to a prolonged hospital stay (10).

Globally, nearly 313 million operations were performed in 2012 (11). The WHO estimates 5 billion people living in countries with little or no access to pain medicines, including 5.5 million terminal cancer patients and millions of others suffering from acute illness and end-of-life suffering (12)

In Africa, the issue of pain has been explored largely in relation to acquired immune deficiency syndrome (AIDS) and cancer, but pain from surgical procedures poses a far greater burden on the patient (5).

With current standard postoperative care (USA national pain management guideline), approximately 80% of all patients experienced acute pain after surgery. Alarmingly, most of these patients had moderate or severe pain (13). In about 59 % of patients, postoperative pain was the most common concern and 90% of them were satisfied with their pain medications. Despite an increased focus on pain management programs and the development of new standards for pain management, many patients continue to experience intense pain after surgery (14).

Complications from poorly controlled POP may embarrass the existing shortage of hospital human resource for health in health facilities in developing countries. Post-operative pain management is still a challenge, as nearly half of the patient had mild pain in the first 48 hours post-surgery (10). Pain in surgical patients remains under managed. In Ethiopia, most patients were feeling moderate to severe pain in their post-surgical period (15). The prevalence of moderate to severe post-operative pain was 28.6% (16).

The finding of this study suggests that post-operative pain was not effectively managed (15, 17). Patient's satisfaction or patient-reported outcome measure in pain management is the most relevant criteria of clinical success (18). Patients of satisfaction could be increased via providing preoperative information related to postoperative pain, preoperative education, and no pharmacological treatment (8, 19).

Untreated postoperative pain may have an effect in the clinical and psychological status of the patients. In addition, it creates a burden to health institutions by increasing costs and prolonging hospital stay. In addition, untreated acute postoperative pain may change to chronic pain with squeal of decreased quality of life with different clinical sequels (19-21). Effective management of pain is advantageous in increasing patient satisfaction and well-being. It also decreases hospital stay and morbidity associated with surgical intervention. Hence, it minimizes the cost of medical care and improves the quality of life (17). Worldwide, ineffective treatment of post-operative pain becomes a problem for the patient, the healthcare institution, and the society. In Ethiopia, pain management is an important concern in all health facilities.

Despite different methods of postoperative pain control have been provided to surgical patients, there had been lack of evidence that examined patients' satisfaction with the quality of postoperative pain management in the study area.

Therefore, we aimed to assess patient's satisfaction and identifying factor that could affect postoperative pain management at Jimma medical center, Jimma, Ethiopia.

1.3. Significance of the study

Only few studies are conducted in our country and there is no a research paper done on the subject matter in our hospital. Hence, the importance of an accurate data regarding satisfaction of post-operative pain management played grater roll in reducing the burden of POP complications and hospital stay.

The result may contribute to the health management at higher levels to develop strategies to alleviate this problem. This research will give information about the adequacy of post-operative pain management and identifies factors affecting it. In addition, the output of this study can serve as a base line for further studies.

Thus to design effective management strategies, there is need of findings about the satisfaction of post-operative pain management and identify factors affecting.

1.4. Objective of the Study

1.4.1. General objective

- To assess satisfaction on postoperative pain management and associated factors among adult patients undergoing abdominal surgery at Jimma medical center, Jimma, southwest Ethiopia in 2022.

1.4.2. Specific objectives

- To assess satisfaction on postoperative pain management among adultpatients undergoing abdominal surgery at Jimma medical center, Jimma, Southwest Ethiopia in 2022
- To identify factors associated with satisfaction on postoperative pain management among adult patients undergoing abdominal surgery at Jimma medical center, Jimma, Southwest Ethiopia in 2022

2. LITERATURE REVIEW

2.1. Postoperative pain management

From study in the USA, Postoperative pain is not adequately managed in greater than 80% of patients(9). Study in Colorado, prevails sixty-two percent of patients experienced severe postoperative pain (10). In Sweden, most of the patient (91%) experienced moderate to severe pain in the first 24 hours (11).

A study in India showed higher prevalence of post-operative pain and increased in the first three post-operative day (84.17%, 92.5% and 96.66% 5th hour, 2nd and 3rd postoperative day, respectively) (10).

A study in Africa, Tanzania, the majority of patients after chest surgery experience various degree of POP (94.1%), Ghana, 73.1% had moderate (NRS 4–7) persistent pain, 23.9% had Severe persistent pain (NRS 8–10), whereas 3% had Mild (NRS 0–3) persistent pain (13, 14).

From study in Addis Ababa, most patients (49.7%) were found to have moderate to severe pain (11) and at Gondar university hospital in Ethiopia, 57% of patients moderate reported to severe pain within immediate post-operative period and 78% in the 1st 12 hour (12). In the study conducted at Debre Tabor compressive specialized hospital, percentage of moderate to severe post-operative pain (Numeric Rating Scale: 4 and above) was between 37.7% within 1 h and 76.7% at 6 h of post-operative period (13).

2.2. Patient's satisfaction postoperative pain management

A study in the USA, Colorado, 87% patient satisfied with postoperative pain management (14). Similarly, a study in New York showed more than 80% managed inadequately (9).

A study in Europe, Sweden, showed 81% of the participant claimed satisfaction with their postoperative pain management (15),

A study in Asia, Malaysia, and the majority of respondents (89.7%) satisfied with the result of postoperative pain management among abdominal surgery (16). Another study in Asia showed 44.8% of patients were very satisfied, 40% moderately satisfied and 16 (15.2%) patients were mildly satisfied with the pain management (17).

In Africa, Tanzania, Dares salaam patient satisfaction is high (74.3%), in Ghana 74.64% moderately satisfied and 22.46% very satisfied (18, 19)

A study in Ethiopia, Addis Ababa at Saint Paul's Hospital Millennium Medical College showed, 62.2% patients were satisfied with POP pain management (11).

The Research was done in St. Paul hospital also showed that post-operative pain is poorly managed (20).

A study in Gondar university hospital showed 72.2% of overall satisfaction.

2.3. Patient's satisfaction and identifying factors

2.3.1. Socio demographic factors

Genetic makeup, individual behavior, cultural influences, and socio-demographic characteristics like age and sex contribute a lot to the individual variation in perceiving pain (4).

Sex: From study in Gondar university hospital, female gender as was independent risk factors patient's satisfaction postoperative pain management (12).

Sex, age, pre-operative expectation and experience of pain relief, and the overall pain experience found to be factors associated with the probability of being satisfied/dissatisfied; main characteristics of the dissatisfied patient were a younger age and female sex (8, 21).

Age: From a study conducted at Gondar university hospital, age less than 60 as was independent risk factors patient's level of satisfaction postoperative pain management (12).

From study in Addis Ababa at Saint Paul's Hospital Millennium Medical College, educational status above secondary school was independently associated with POP management satisfaction (22).

2.3.2. Clinical profiles

From study in Addis Ababa emergency procedures and duration of surgery above one hour were found to be independent risk factors for POP pain (22) and from study conducted at Debre Tabor compressive specialized hospital general anesthesia and

incision length greater than 10 cm were identified as independent risk factors for post-operative pain severity (12, 13).

One study from abroad revealed that the only factors significantly associated with being very satisfied with pain management were the receipt of adequate analgesia, specific advice about pain, and an oral opioid (23). A study in Ghana, pain relief received and ability to request pain relief found to be indicators of being satisfied (18).

At Gondar university hospital in Ethiopia, moderate to severe pain was reported in 85 (57%) of patients in the immediate post-operative period and 117 (78%) in the 1st 12 hours. ASA I and II, age less than 60, female gender, general anesthesia and incision length greater than 10 cm were identified as independent risk factors for post-operative pain severity (12).

Conceptual framework

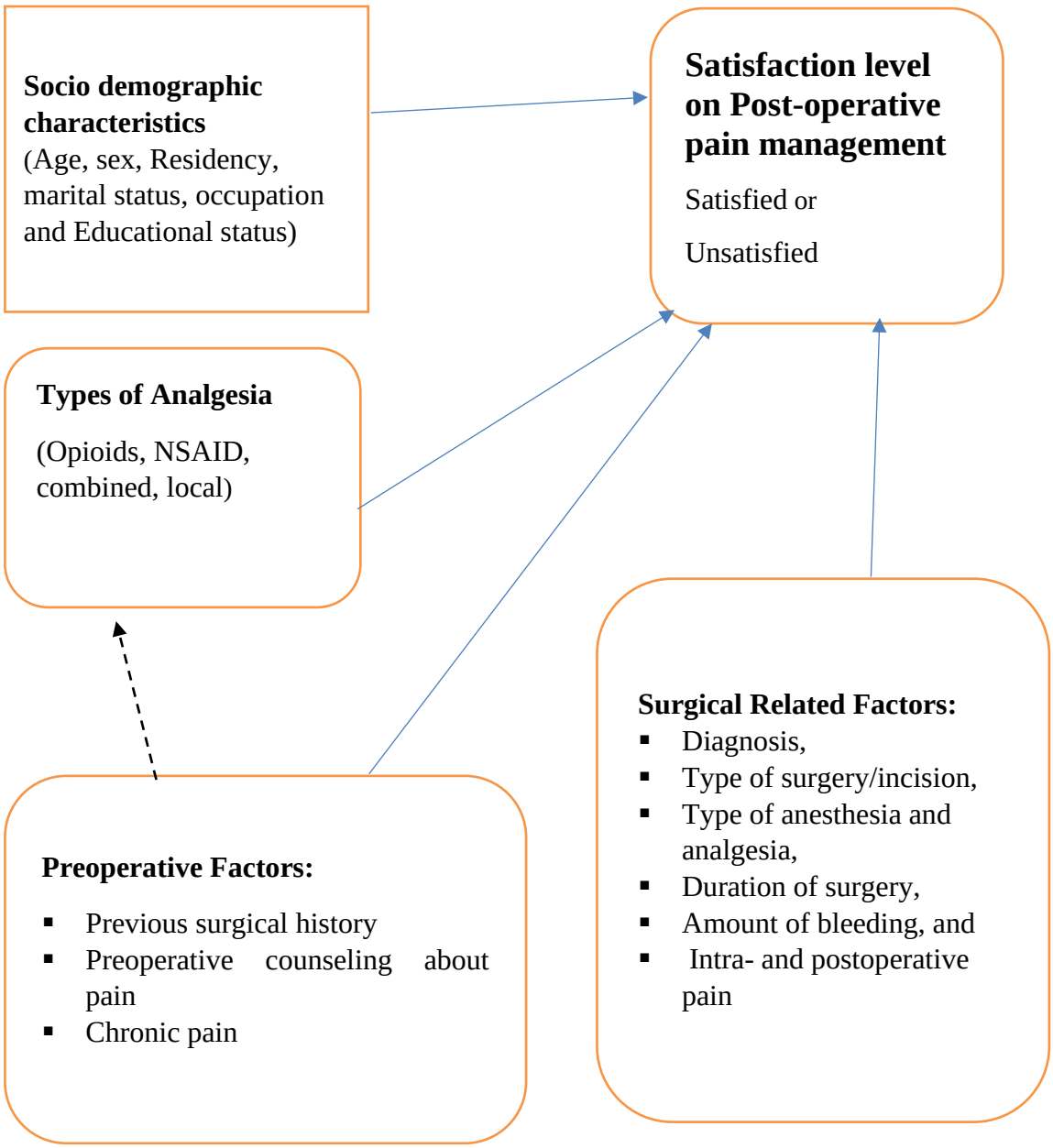

Figure 1: conceptual framework for satisfaction on postoperative pain management and associated factors among patients undergoing abdominal surgery at Jimma medical center, Jimma, southwest Ethiopia in 2022 (18, 24-26)

3. METHODS AND MATERIALS

3.1. Study design and period

An institutional based cross-sectional study was conducted in JMC from September 1, 2022, to October 31, 2022. All patients who were undergoing any abdominal surgery at Jimma medical center, from September 1 to October 31, 2022, were included in this study.

3.2. Study Area

- This study will be carried out in Jimma, one of the largest cities in southwestern Ethiopia. It is the special zone of the Oromia region, and is surrounded by Jimma zone.
- Jimma University is located in the city of Jimma; it is one of the largest and comprehensive public research universities in Africa.
- This study will be conducted in JUMC from September - October /2022 G.C. since it is possible to obtain a sufficient number of surgical patients serving who are coming from different parts of southwestern Ethiopia; Jimma medical center provides services to 15 million people with 1600 staff member and 800beds.
- Department of surgery is one of the main departments in JUMC, which gives full-fledged clinical service and offers specialty training.

3.3. Source population and study population

3.3.1. Source population

All patients who were undergoing abdominal surgery at JMC from September 1/2022 to October 31/2022 were the source population.

3.3.2. Study population: All adult patients undergoing abdominal surgery at JMC from September 1/2022 to October 31/2022 were the study population.

3.4. Eligibility criteria

Inclusion criteria: All patients whose age 15 years and above, undergo abdominal surgery at JMC from September 1/2022 to October31/2022 and able to communicate were included in the study.

Exclusion criteria: All patients who were undergoing abdominal surgery at JMC and who are not admitted for recovery and unconscious, those who weren't voluntary to be participant unable to hear during the data collection period, September 1/2022 to October 31/2022 were excluded.

3.5. Sample size determination and sampling procedures

All patients who undergo abdominal surgery at JMC from September 1/2022 to October 31/2022 used to collect data for achieving the objective of the study.

One hundred fifty-six patients were admitted and undergone abdominal surgery at JMC. Out of total 156 patients' 149 met inclusion criteria while two cases were deaths before data collection and five were unable to communicate because of change of mentation with overall response rate of 100%.

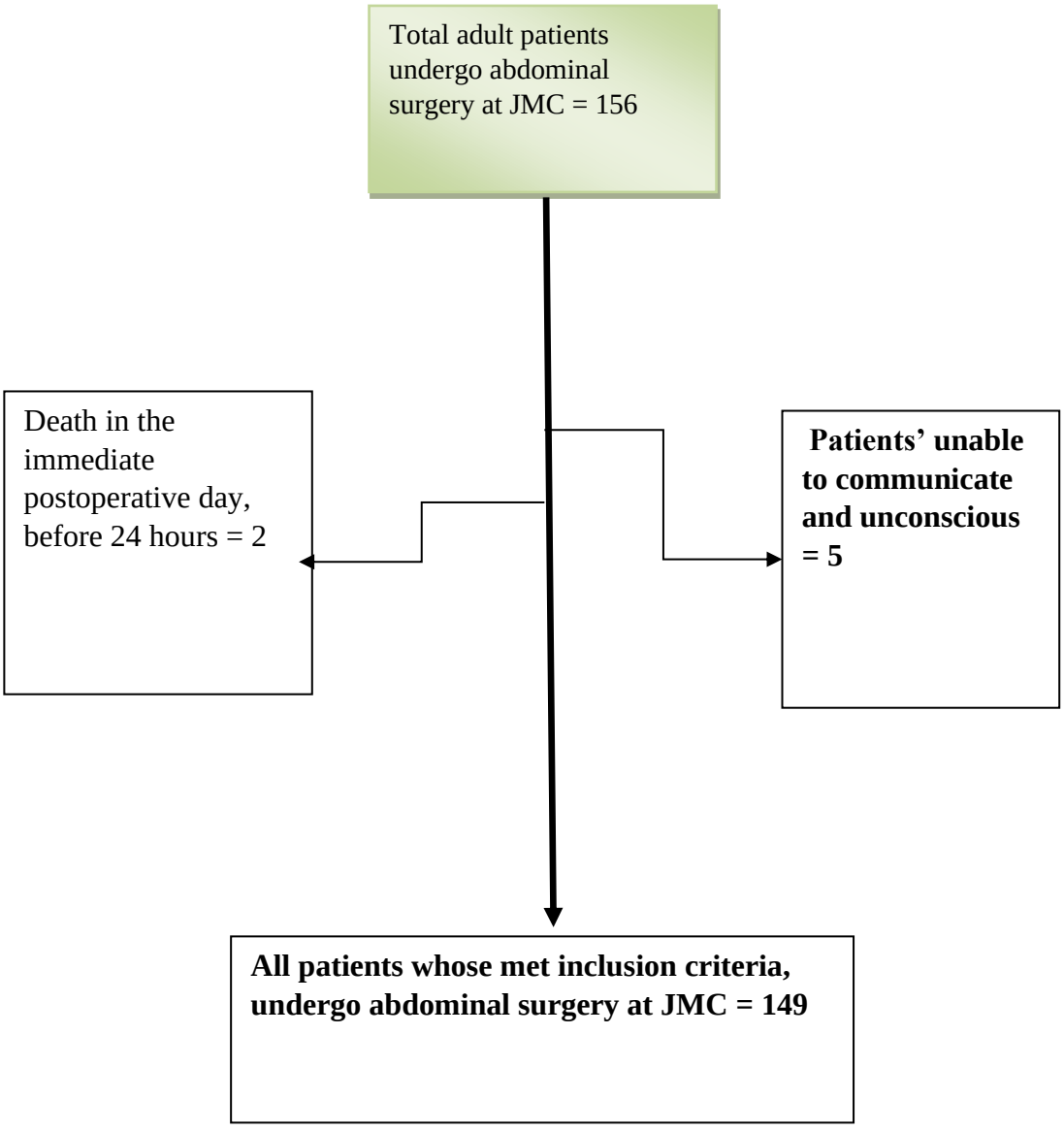

Figure 2:-Sampling procedures for satisfaction on postoperative pain management and associated factors among patients undergoing abdominal surgery at Jimma medical center, Jimma, southwest Ethiopia in 2022

3.6. Variables of the study

3.6.1. Dependent variables

Level of patient's satisfaction on post-operative pain management was as "satisfied or unsatisfied".

3.6.2. Independent variables

- **Socio-demographic Factors**: Age of patient, sex, Marital Status of a patient, Place of residence, Employment, and Level of education
- **Preoperative Factors**: Preoperative counseling about pain, chronic pain,
- **Surgical Related Factors**: Diagnosis, type of surgery/incision, type of anesthesia and analgesia, duration of surgery, Amount of bleeding,

3.7. Operational definitions

Patient's satisfaction expressed through 6 items, each item has a- 5-point Likert scale ranging from strongly dis-satisfied to strongly satisfied (1 to 5 points) for 3 items and 2 items from severe pain to no pain (1 to 5 points) was used (27, 28). Finally, Patients' who scored >=75% leveled as satisfied and <75% as unsatisfied (29)

3.8 Data collection instruments and procedure

Structured data extraction checklists prepared through reviewing varieties of literatures. The first part of the questionnaire consists of issues related to the personal information of included the age, sex, place of residence. The second part is concerned with the satisfaction on postoperative pain management.

All patients who were volunteer, age 15 years and above, undergo abdominal surgery, and able to communicate will be included in the study. For those below 18 years, consent taken from family or attendant.

3.9. Data quality control measures

Data collected through patients' chart review, interview, and five-point Likert scale. Questionnaires including five-point Likert scale initially prepared in English version translated to local language (Amharic and Afan Oromo language). Data collected within 24 hours after operation. Two junior residents were involved in data collection after receiving training and supervised by the principal investigator. Patient satisfaction was measured using six satisfaction-measuring items on a five-point Likert scale, together yielded a maximum of 30 and a minimum score of 6. The six measuring item developed and modified from research done in India (27). Then the responses to the 6 measuring items were summed and transformed to give an individual satisfaction score from 1 to 100% for each item. Patients who scored 75% and above on the 6 satisfaction measuring items were taken as satisfied, and those who scored less than 75% were taken as unsatisfied (29).

Pre-testing of the preliminary review of checklist made at Jimma medical center 5% of sample, correct, and reformats accordingly. Check the completeness and consistency of each checklist with close supervision. All the collected data checked & rechecked, and necessary correction made each day.

3.10. Data Processing and analysis

Data was cleaned and crosschecking done before analysis. The decoded data entered in Epi data version 4.6.0 and exported to SPSS version 25 for analysis. Descriptive statistics like frequency tables, graphs and charts used to describe the variables.

Crude and adjusted odds ratio used to know and ascertain any association between the independent and dependent variables. Logistic regression performed to assess the presence of any association between each independent variable and dependent variable. Those variables at Binary logistic regression which show statistical association at a p value<0.2 move to multivariable logistic regression model for the dependent variables to control potential confounding variables. Finally, variables at Adjusted Odds Ratio (AOR) with 95%CI and P-value less than 0.05 declared as statically significant in this study.

The relationship of nominal data with satisfaction analyzed by using cross tabulation.

3.11. Ethical consideration

Ethical clearance obtained from Institutional Review Board (IRB) of JU College of Medicine and Health Sciences, and communicated to JMC. The data found in the patient were secured or confidential and the personal identifiers such as name not extracted. Information used as aggregated after analysis of whole data. Finally, after the whole process of data collection, the questionnaire kept safe throughout the whole process of the research work until the paper published.

3.12. Plans for dissemination of finding

After the whole process of the research work, hard and soft copy of the result of the study submitted to Jimma University College of Medicine and Health Sciences, Department of surgery. Formal defense of the paper considered as one mechanism of dissemination and utilization of the result. Finally, the research will be published in recognized journal to be available for those who could benefit from the study.

4. RESULTS

During the period from September 1/2022 to October 31/2022, 156 patients were admitted and undergone abdominal surgery at JMC. 149 patients with a response rate of 100% were enrolled in the study.

Socio-demographic characteristics:

Among the study patients, 76 (51.0%) were females and 73 (49.0%) were males giving a M: F ratio of 1:1. Most of the respondents, 87 (57.7%), were in the age group of 25–49 years. The majority of the study cases were rural dwellers 93(62.4%) compared to urban dwellers who were 56(37.6%). Most of the study participants were married, 126(84.6%). Regarding occupational level, 120(80.5%) were employed or have own private, followed by unemployed, 29(19.5%) and 61(40.9%) study participants were unable to Write or no formal education. (Table 1).

Preoperative and Surgical Related Factors

In this study More than fifty percent (51.0%) underwent emergency surgery and lower abdomen is the commonest type of skin incision /surgery 51(34.2%) followed by midline laparotomy 48 (32.2%) and upper abdomen 29(19.5%). The majority of the study participants, 96(64.4%), 109(73.2%), and 84(56.4%) have no prior chronic, receive combination of analgesia, and not advised about POP, respectively. Most of the study participants were responded to feeling pain 136(91.3%) and the majority of patients given general anesthesia 104(69.8%). (Table 2).

Table 1: Socio-demographic characteristics of the satisfaction on postoperative pain management and associated factors among patients undergoing abdominal surgery at JMC, Jimma, Southwest Ethiopia in 2022

Characteristics	**Category**	**Number**	**Percent**
Sex	Female	76	51
	Male	73	49
Residency	Urban/Town	56	37.6
	Rural	93	62.4
Age (in years)	Age 15-24	14	9.4
	25-49	86	57.7
	>=50	49	32.9
Marital status	Married	126	84.6
	Single	23	15.4
Educational level	Illiterate/No formal education	61	40.9
	Primary school (1-8)	22	14.8
	Secondary school (9-12)	27	18.1
	College diploma (Diploma, degree and above)	39	26.2
Occupation	Unemployed	29	19.5
	Employed	120	80.5

Table 2: Distribution of preoperative and surgical related factor among patients was undergoing abdominal surgery at JMC, Jimma, and Southwest Ethiopia in 2022

Variables	**Label**	**Number**	**Percent**
Type of surgery	Emergency	73	49.0
	Elective	76	51.0
Types of skin incision	Lower abdomen	51	34.2
	Midline laparotomy	48	32.2
	Upper abdomen	29	19.5
	Flank incision	21	14.1
Duration of surgery	<2 hrs.	100	67.1
	2-4 hrs.	44	29.5
	>= 4hrs	5	3.4
Have any prior chronic Pain or known illness	Yes	53	35.6
	No	96	64.4
Amount of bleeding	<500ml	125	83.9
	>=500 ml	24	16.1
Preoperative analgesia Given	Yes	109	73.2
	No	40	26.8
Types of analgesia given	Opioids	5	3.4
	NSAID	29	19.5

	Combination	115	77.2
Types of anesthesia	GA	104	69.8
	Regional/SA	45	30.2
Advised preoperatively about post-operative pain	Yes	65	43.6
	No	84	56.4
Felling any pain now	Yes	136	91.3
	No	13	8.7

Patient's Satisfaction in Postoperative Pain Management

In this study overall of the study participant who were satisfied with pain management service were 90(60.4%) (95% CI: 54.6-68.2 (Figure 3)

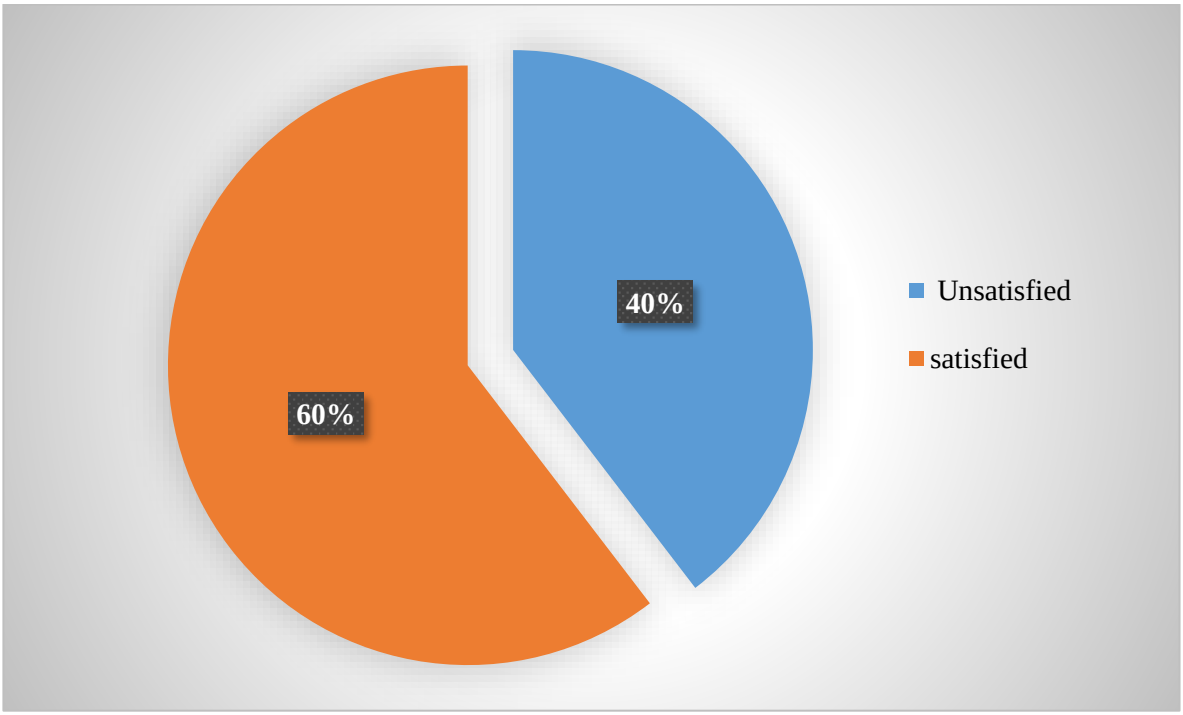

Figure 3: Patient's satisfaction on postoperative pain management among patients undergoing abdominal surgery at JMC, Jimma, and Southwest Ethiopia in 2022

Factors associated with post-operative pain management satisfaction

Using bi-variable analysis (On crude odds ratio), age, sex, residency, educational level, employment status, previous chronic pain, advised preoperatively on POP, ask

medication for pain, types of anesthesia and amount of bleeding, were significantly associated with patient's satisfaction on postoperative pain management among patients undergoing abdominal surgery at $P < 0.02$.

Numerous associations were found to be significant in the bi-variable analysis. Therefore, a multivariable approach was applied to determine which factors best explained and predict patients' satisfaction on postoperative pain management. All explanatory variables showing significant association with dependent variable analyzed using back ward stepwise multivariable logistic regression model to avoid the possible confounding variables. As a result, six variables such as; educational level (illiterate), previous chronic pain, advised preoperatively on POP, asked medication for pain, types of anesthesia and amount of bleeding, were significantly associated with patient's satisfaction on postoperative pain management among patients undergoing abdominal surgery at 95% confidence interval and $P < 0.05$.

Therefore, those illiterate (had no formal education) patients were 79% times less likely to be satisfied with postoperative pain management compared to those who had a college diploma and above (AOR: 0.21; 95% CI: 0.06, 0.70, p = 0.012).

Those patients who used spinal anesthesia were 4.09 times more likely to be satisfied with postoperative pain management compared with who used general anesthesia (AOR: 4.09; 95% CI (1.41, 11.89, p=0.010).

Those patients who asked for medication were 88% times less likely to be satisfied with postoperative pain management compared to those patients who did not ask for medication (AOR: 0.12; 95% CI: 0. 04, 0.32, p = 0.000)

Those patients who had previous chronic pain were 84% times less likely to be satisfied with postoperative pain management compared to those who had no previous chronic pain (AOR: 0.16; 95% CI: 0. 06, 0.44, p = 0.000).

Those patients who were advised preoperatively on post-operative pain were 3.39 times more likely to be satisfied with postoperative pain management compared with those advised (AOR: 3.39; 95% CI (1.23, 9.33, p=0.018).

Those patients who bleed 500ml and above while undergoing abdominal surgery were 96% times less likely to be satisfied with postoperative pain management compared to those patients who bleed less than 500ml (AOR: 0.04; 95% CI: 0. 01, 0.19, p = 0.000).

Table 4: -Bi-variable and multivariable factors associated with satisfaction with postoperative pain management among patients undergoing abdominal surgery at JMC, Jimma, and Southwest Ethiopia in 2022.

Variables	Satisfaction on PO pain management		COR (95% CI)	AOR (95% CI)	P-value
	Satisfied	Unsatisfied			
Age in years					
15-24	11	3	4.9(.1.21,19.75) *	1.41(.14, 9.50)	
25-49	58	28	2.76(1.34, 5.69) *	1.25(.36, 4.36)	
≥50	21	28	1	1	
Residency					
Urban	45	11	.23(0.10, .50) *	1.25(.24, 6.47)	
Rural	45	48	1	1	
Educational level					
Illiterate	25	36	.27(.12 .65) *	.21(.06, .70) *	.012
Primary school	15	7	.84(.27 2.62)	.35(.077, 1.59)	
Secondary school	22	5	1.73(.52 5.71)	1.68(.32, 8.92)	
College diploma	28	11	1	1	
Employment status					
Employed	21	5	3.86(1.34,11.09) *	3.06(.471,19.87)	
Unemployed	20	9	2.04(.84,4.94)	.83(.17, 4.07)	
Private	49	45	1	1	
Prior chronic Pain					
Yes	17	36	.15(.07, .31)*	.16(.06, .44)*	.000
No	73	23	1	1	
Advised on POP					
Yes	44	21	1.73(.88, 3.40)	3.39(1.23,9.33)*	.018
No	46	38	1	1	
Ask medication for pain					
Yes	26	42	.16(.08, .34)*	.12(.04,.32)*……..	.000
No	64	17	1	1	
Types of Anesthesia					
GA	67	37	1	1	
Regional/SA	23	22	11.73(.85, 3.52)	4.09(1.41,11.89) *	.010
Amount of bleeding					
<500ml	85	40	1	1	
>=500 ml	5	19	.12(.04, .36)*	.04(.01, .19)*	.000

**Significantly associated at p-value <0.05*

5. DISCUSSION

The study found that 60.4 % of patients were satisfied on postoperative pain management after undergoing abdominal surgery.

The result of this study is low compared to study in Gondar (72.2%), Addis Ababa (92.2%, Ghana (97%), Colorado (87%), Sweden (81%)(11, 14, 15, 18, 30). Similarly, it is low compared to study in Malaysia showed 89.7% of patients satisfied among abdominal surgery (16). In addition, study in India also has high as compared to this study; around 92 %(110/120) of patient satisfied or very satisfied(31). Another study in US, Chicago found 87% of satisfaction at discharge (32) and study in Middle east, 47 (44.8%) patients were very satisfied, 42 (40%) moderately satisfied and 16 (15.2%) mildly satisfied (33). This may be due to increase awareness, well established guideline and adherence to the guideline. The above-mentioned studies were used strong opioids, combination of NSAIDs and Opioids, nerve block and traditional ways of pain management that increased level of satisfaction.

The satisfaction level on postoperative pain management among patients undergoing abdominal surgery in this study was higher than from study conducted in Tanzania (41.4%) (5, 19). This difference may come from; that research included all types of surgery (thoracotomy, orthopedics) which is associated with poor postoperative management satisfaction.

This study found that illiterate (had no formal education) was significantly associated with satisfaction level, that is those patients who were illiterate (had no formal education) were 79% times less likely to be satisfied on postoperative pain management compared to those who are college diploma and above. A study in Ghana showed those who persuaded secondary school and above extremely satisfied with their pain management after abdominal surgery (18). This may be due to those with no formal education have little understanding about POP.

Those patients who used spinal anesthesia were 4.09 times more likely to be satisfied on postoperative pain management compared with those used general anesthesia. Findings

in this study is the same with study done in Debre tabor and Ghana, general Anesthesia associated with moderate to severe pain (**AOR: 4.08; 95% CI: 1.30, 12.77)** as compared t**o SA** (21, 24)**.** Another study findings indicated that the patients who received general anesthesia with endotracheal intubation developed severe postoperative pain more frequently than those who underwent spinal anesthesia (P = 0.018) (34).

Those patients who asked medication for their pain were 88% times less likely to be satisfied on postoperative pain management compared to those patients who did not ask medication for their pain. There was a statistically significant positive correlation identified between the patient's ability to request more pain relief and Satisfaction (18). Patients who received analgesics before request were 6.9 times more likely to be satisfied compared with those patients who had not received analgesics before request or totally did not receive analgesic (AOR: 6.90; 95% CI: 3.72, 12.83) (30). This may be due to delayed in responding for their request. It is not the request that predict satisfaction, it how fast the caregiver responded for the request.

Those patients who advised preoperatively on post-operative pain were 3.39 times more likely to be satisfied on postoperative pain management compared with those not advised.

Those patients who had previous chronic pain are 84% times less likely to be satisfied on postoperative pain management compared to who had no previous chronic pain. A result study in Japan, having preoperative chronic pain decreased post-operative pain satisfaction by 54% compared with patients without chronic pain (35), diabetic patients have pain intensity than non-diabetic after cholecystectomy (60%) and poor satisfaction with conventional management (36). A study in Gondar found that disease status has a association with the level of satisfaction, ASA1 patients were 3.5 times more likely to be satisfied compared with ASA3 and ASA4 patients (AOR: 3.55; 95 CI: 1.20, 10.55) (30). Having preoperative chronic pain (AOR: 7.92, 95% CI: 3.04, 20.63), history of preoperative anxiety (AOR: 6.42; 95% CI: 2.59, 15.90) associated with moderate to severe postoperative pain and poor outcome with conventional single agent management (24). This may be due to unaddressed disease, chronic disability.

Those patients who bleed 500ml and above while undergoing abdominal surgery were 96% times less likely to be satisfied on postoperative pain management compared to

those patients who bleed less than 500ml. This may be due to extensive tissue damage and symptoms of anemia.

Strengths and limitations of the study

Strengths of the study

The response rate was 100% and all study participants were cooperative. Furthermore, all staffs were cooperative during data collection.

Limitation of the study

Since the study conducted in a single hospital, undergone abdominal surgery, it could not generalize to the population living in the catchment area. In addition, since the study is cross-sectional survey, it cannot determine chronic pain/ disability due to poor management of clients. There was no progressive interval pain assessment.

In addition to this, there is no appropriate pain scoring and analgesia administration sheet.

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

The study found that 60.4 % of patients were satisfied on postoperative pain management after undergoing abdominal surgery. It is very low as compared to other studies.

The study found that educational level, presence of previous chronic pain, advised preoperatively on postoperative pain, ask medication for pain, types of anesthesia given and amount of bleeding at time surgery, were significantly associated with patient's satisfaction on postoperative pain management. Illiteracy, previous chronic pain, general anesthesia, significant bleeding decreased patient satisfaction. Hence, it is vital to do preoperative counseling, interval assessment of pain severity and adequacy of pain management. The physician should adherence to WHO step ladder acute pain management.

6.2. Recommendation

- The university shall give greater attention for residents to engage in project, and more time for research.
- Further research shall be multicenter facility and prospective follow up study.
- For hospital, staffs' and surgeons shall give greater attention for pain management, patient satisfaction for surgically managed patients.
- There should be appropriate pain scoring and analgesia administration sheet record
- The hospital shall give training about postoperative care and pain management for staffs. The hospital shall develop guideline and monitoring system.

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ANNEXES: DATA COLLECTION FORMAT

Annex 1: Questionnaire

Verbal consent form before conducting interview

Greeting

Hello, my name is _____ and I am a data collector for the study entitled "post-operative management satisfaction and associated factors at JMC". It is a study aimed to assess the satisfaction of pain management having surgery in this hospital. I will ask you few questions that will only take 5 minutes of your time regarding this matter. Being a part of this study will not affect in any way the service you are getting in this hospital. You are selected to participate in the study just because you undergone abdominal surgery in this hospital, no other special criteria. You are free to withdraw from the study and you can stop answering to any questions that are forwarded to you at any time you want. In the study, any answer you gave will be confidential and in addition, your name, address or any information that identifies you will not be use. Do you agree to participate in the study?

If **yes**, continue the interview.

If **no**, discontinue the interview and give welfare.

Semi structured interview guide		
1	Age (yrs)	1. 15-24 2. 24-49 3. >=50
2	Sex	1. Female 2. Male
3	Residency/ address:	1. Urban 2. Rural
4	Marital status:	1. Married 2. Single +(Divorced, Widowed)
5	. Educational level	1. Illiterate/no formal education 2.Primary school (1-8) 3. Secondary school (9-12) 4. College diploma (Diploma, degree and above
6	Employment status	1. Governmental Employed 2. Unemployed
7	Did you have any prior chronic Pain?	1.Yes 2. No
8	Did you advised/counseled preoperatively about post-operative pain	1.Yes 2. No
9	Are you felling any pain now?	1.Yes 2. No
10	If the answer to question no 6 is yes the intensity of pain (VAS or NRS)	1. Mild (0-4) 2. Moderate (5-6) 3. Severe (7-10
11	Where do you feel pain now? If yes on Q9	1, Is it on the surgical site? 2. Other than surgical site
12	Did you ask any additional pain medication for your pain?	1. Yes 2. No

13	. Did you receive any medication for your pain medication request?	1. Yes 2. No
14	14. If yes to question for Q11, after how long from your requisition did you receive the medication?	1. <1 Hrs. 2. 1- 2 Hrs. 3. 2-4 Hrs.
15	. Did you get pain relief after medication?	1. Yes 2. No

16	Satisfaction assessment questionnaire (modified from (27)	**Values**				
		1	**2**	**3**	**4**	**5**
16.1	What type of pain do expect/preoperative expectation	Severe	Less Severe	Moderate	Mild	No Pain
16.2	What type pain did you experience	Severe	Less Severe	Moderate	Mild	No Pain
16.3	After how many hours the nurse responded for your help	No Response	>= 4hrs	2-4 Hrs.	1-2 Hrs.	Before 1 Hrs.
16.4	What was the quality pain relief after medication	Very Unsatisfied	Unsatisfied	Average/Neutral	Satisfied	Very Satisfied
16.5	How would you rate the attentiveness/sensitivity of staffs' for your pain management	Poor	Fair	Good	Very Good	Excellent
16.6	How was overall experience your pain management	poor	Fair	good	Very good	Excellent

Annex-2: Structured checklists filled from patient's chart

1	Patient Master Registration Number (MRN)	_____
2	Diagnosis	1. Acute abdomen 2. Malignancy/Cancer 3. Gynecology 4. Other includes cholidocholelithiasis, hernia, trauma and redundant
3	What type of surgery is it?	1. Emergency 2. Elective
4	Where is the site of surgery/incision?	1. Upper abdomen 2. Lower abdomen 3. Midline laparotomy 4. Flank incision
5	What is Duration of surgery?	1. <2 Hrs. 2. 2-4 Hrs. 3. >= 4 Hrs.
6	What is the amount of intra-operative bleeding	1. <500ml 2. >500ml
7	Is pre/intraoperative analgesia given?	1. Yes 2. No
8	What types of analgesia given?	1. Opioids: tramadol/ morphine 2. NSAID 3. Combination 4. Local infiltrations
9	What types of anesthesia given one?	1. GA 2. Regional/SA