

Assessment of Patient Satisfaction and Associated Factors in Postoperative Pain Management at University of Gondar Compressive Specialized Hospital, Northwest Ethiopia, A Cross Sectional study.

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Abstract

Background: The main aim of this study was to assess the level of patient's satisfaction and associated factors in post-operative pain management.

Methods: An institutional based cross sectional study was conducted from April, 11-May 15, 2018. Data were collected by structured, pre-tested patient interview questionnaire and chart review. Level of patient satisfaction was measured by using five-point Likert scale and checklist. The coded data were entered to Epi-info software version 7 and analyzed using statistical package for social sciences software version 23. The strength of the association was presented using adjusted odd ratio with 95% confidence interval and p-value < 0.05 was considered as statistically significant.

Results: A total of 418 patients were included in this study with a response rate of 98.58 %. The overall proportion of patients who were satisfied with pain management services was 72.2 % [95%CI:67.7-76.6]. ASA1 [AOR=3.55:95%CI=1.20-10.55] & ASA2 patients [AOR=3.72:95%CI=1.04-13.28], Patients with no post-operative pain [AOR=1.86:95%CI=1.02-3.39], post-operative nerve block [AOR=9.14:95%CI=3.93-20.86], analgesic before request [AOR=6.90:95%CI=3.72-12.83] and receiving postoperative analgesics [AOR=6.10:95%CI=1.17-33.91] were significantly associated with level of satisfaction.

Conclusion: Pain assessment during immediate postoperative period, providing regular based analgesia before patient request and to promote the practice of post-operative nerve block are important to increase the level of satisfaction.

Background

Globally, Post-operative pain is one of the major concerns in surgical patients and many studies have been done through different methods to assess patient satisfaction with post-operative pain management and associated factors (1–3).

Satisfaction is a general psychological condition that results from emotional surrounding expectations coupled with the prior feeling of consumers toward the consumption experience (4). Patient satisfaction in pain management is one of the variables that affect the outcomes of health care services, but it could be difficult to achieve in a single specific intervention (5, 6). Previously, traditionally lack of complications and vital sign used as a measurement of clinical success. However, recently patient-reported outcome measures or patient satisfaction is the most relevant criteria of clinical success (7).

Factors affecting satisfaction of pain management are gender, age, pre-operative expectation, information given prior to surgery, ASA status, preoperative pain medication, types of anesthesia, types and duration of surgery, communication of staffs with patient, actual experience of pain relief. (8–11). Factors which increase level of satisfaction are preoperative information related to postoperative pain, preoperative education and non-pharmacological treatment (12, 13).

Untreated postoperative pain also may have effect in clinical and psychological status of the patients. In addition, it creates burden to health institution by increase costs and prolong hospital stay. Untreated acute post-operative pain may change to chronic pain, which causes to decrease quality of life with different clinical sequels (14–18).

Despite different methods of post-operative pain control have been provided to surgical patients, there had been lack of evidence that examined patients' satisfaction with the quality post-operative pain management in the study area. Hence, the aim of this study was to assess the level of patient satisfaction and associated factors of post-operative pain management.

Methods

Study design, area, and period

Institution based cross –sectional study was conducted from April, 11 –May 15, 2018 at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. University of Gondar Comprehensive Specialized Hospital is a referral and teaching hospital which is found in Gondar town. This Hospital is located 738 km Northwest from Addis Abeba, Medina of Ethiopia and 230 Km from Ethiopia-Sudan boarder. The Hospital is estimated to serve over 5 million people around the area. According to the annual report of the Hospital, more than six thousand patients were operated upon under anesthesia in 2017.

Sample size determination and sampling procedure

The required sample size was calculated using a single population proportion formula. In a previous study done in Jimma University Specialized Hospital showed that satisfaction rate was 50 %, 5% of accepted difference and CI of 95%.

$$n = \frac{(Z\alpha/2)^2 p(1-p)}{w^2}$$

Assumptions 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=best estimate of the population proportion, When 10% of non-response rate was added, the total number of patients who were participate in the study were 424. All adult consecutive patients both elective and emergency operations in University of Gondar Comprehensive Specialized Hospital in all operation theatres were included till the calculated sample size reached.

Data collection procedure

Data were collected by interviewing participants and reviewing patients' charts using structured and pretested Amharic version questionnaire. The Amharic version questionnaire was translated from English language. The pre-test was done on 10 %(43) patients of the sample size, corrections were made before the main data collection. Data was collected at 24 hours after operation. BSc holder anesthetists were involved

in data collection after training and the data was collected consecutively till reached the sample size. Level of patient satisfaction was measured using five point Likert scale ((1=very dissatisfied, 2=dissatisfied, 3=Neutral, 4=satisfied and 5=very satisfied) and checklist. The reliability coefficient (Cronbach,s^s alpha) tests of this instrument for our total respondents was 0.97.The questionnaire was modified from American pain society satisfaction survey, American pain society -patient-outcomes questionnaires –modified(18-20) and Department of Anesthesiology and Intensive Care, Helsinki University Hospital(11).

Study variables

The dependent variable of this study was level of patient satisfaction, which was recorded by five-point Likert scale. Patients who were satisfied with postoperative pain management who scored above the cut point based on the demarcation threshold formula **[total highest score-total lowest score]/2] + (Total lowest score)**. The independent variables were socio demographic factors (Sex, age, BMI, level of education, religion, and ethnicity).Preoperative factors (surgical history, preoperative pain and treatment and previous side effects of pain medication, preoperative information of postoperative pain management and side effect, and operation) and disease status. Surgical related factors (body site of surgery, type of surgery, type of anesthesia and analgesia, duration of surgery, Surgeon, and intra- and post-operative pain).

Data processing and analysis

Data clean up and cross-checking were done before analysis. The coded data were entered to Epi -info software version 7 and exported to SPSS version 23.Bivariate and Multivariate logistic regression was used to control the possible confounding factors and to identify factors associated with patient satisfaction. The cut point for statistical significance was <0.2 and 0.05 for bivariate and multivariate logistic regression respectively. Relationship of nominal data with satisfaction was analyzed by using cross tabulations.

Categorical data were presented as numbers and frequencies (percentages).Patient's satisfaction with five point likert scale was classified into two as satisfied and dissatisfied group by using **demarcation threshold formula [total highest score-total lowest score]/2] + (Total lowest score)](21-25)**.Patient who scored less than 79.5 point out of 130 was considered as dissatisfied whereas 79.5 and above was considered as satisfied.

Results

Socio-demographic And Clinical Characteristics Of The Study Participants

A total of 418 patients with a response rate of 98.58% were enrolled in this study. Six patients were excluded from analysis for incomplete data. Two-third of study subjects, 279(66.7%) were females. Most of the respondents 311(74.4%) were in the age group of 18–39 years. The mean age ± SD of the study subjects was 33.5 ± 13.2 years and the mean ± SD of BMI were 22.2 + 3.0 kg/m².From the participants 216(51.7%) were unable to read and write.90.4% of respondents were Christians and 99.5% were Amhara nation .From

418 patients, 74.4% were ASA1. The majority of the study participants (64.4%) were underwent abdominal procedure, 87.1% were major surgery and 55% were emergency surgery. 45.9% patients were operated under general anesthesia and 54.1% were operated under spinal anesthesia (Table 1).

Table 1
Socio-demographic and Clinical Characteristics of patients underwent surgery under anesthesia at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2018 (N = 418).

| Variables | | Frequency(n) | Percentages (%) |
|---|--------------------------|--------------|-----------------|
| Gender | Male | 139 | 33.3 |
| | Female | 279 | 66.7 |
| Age (years) | 18–39 | 311 | 74.4 |
| | 40–55 | 73 | 17.5 |
| | > 55 | 34 | 8.1 |
| BMI | Under weight | 29 | 6.9 |
| | Normal | 325 | 77.8 |
| | Over weight | 53 | 12.7 |
| | Obese | 11 | 2.6 |
| Religion | Christian | 378 | 90.4 |
| | Muslim | 40 | 9.6 |
| Ethnicity, | Amhara | 416 | 99.5 |
| | Others | 2 | 0.5 |
| Education | Unable to read and write | 216 | 51.7 |
| | Able to read and write | 8 | 1.9 |
| | Primary school | 43 | 10.3 |
| | High school | 83 | 19.9 |
| | College/University | 68 | 16.3 |
| ASA status | ASA1 | 311 | 74.4 |
| | ASA2 | 69 | 16.5 |
| | ASA3 & 4 | 38 | 9.1 |
| Body site of surgery | Limbs | 47 | 11.2 |
| | Head and neck | 52 | 12.4 |
| | Thoracic | 8 | 1.2 |
| Data were expressed in number and percentage, others = Tigray and Oromo | | | |
| R = Resident | | | |

| Variables | | Frequency(n) | Percentages (%) |
|---|---------------|--------------|-----------------|
| | Abdomen | 269 | 64.4 |
| | Spine | 4 | 1.00 |
| | Genitourinary | 38 | 9.1 |
| Types of surgery | Elective | 188 | 45 |
| | Emergency | 230 | 55 |
| | Major | 364 | 87.1 |
| | Minor | 54 | 12.9 |
| Type of anesthesia | GA | 192 | 45.9 |
| | SA | 226 | 54.1 |
| Surgeon | R1 | 9 | 2.2 |
| | R2 | 81 | 19.4 |
| | R3 | 126 | 30.1 |
| | R4 | 93 | 22.2 |
| | Senior | 109 | 26.1 |
| Data were expressed in number and percentage, others = Tigray and Oromo | | | |
| R = Resident | | | |

Level of Patient's Satisfaction in Postoperative Pain Management with Subscales and Overall.

The overall of patients who were satisfied with pain management services in this study was 72.2% [95%CI: 67.7–76.6]. Highest satisfaction score was with communication and the way of responded to reports of pain (76.6%) whereas the lowest score with preoperative information and general care (Fig. 1).

Factors Associated with Patient Satisfaction with Post-operative Pain Management.

Multivariate analysis showed that ASA status, post-operative pain, nerve block, receive analgesics and analgesics before request were the significant factors associated with patient satisfaction in post-operative pain management (Table 2).

Table 2

Bivariate and Multivariate Logistic Regression Analysis Results, Patients Experiences in Perioperative Time for Satisfaction of Post-Operative Pain Management at University Of Gondar Compressive Specialized Hospital, Northwest, Ethiopia, 2018, (N = 418).

| Variables | | Level of satisfaction | | Odd ratio with 95% CI | |
|----------------------|---------------|-----------------------|--------------|------------------------------|-------------------|
| | | Satisfied | Dissatisfied | COR(95%CI) | AOR(95%CI) |
| Age (years) | 18–39 | 218(70.1) | 93(29.9) | 1 ^a | 1 |
| | 40–55 | 60(82.2) | 13(17.8) | 1.97(1.03,3.76)* | 2.0(0.79,5.19) |
| | > 55 | 24(70.6) | 10(29.4) | 1.02(0.47,2.22) | 0.68(0.22,2.03) |
| Body Mass Index | Normal weight | 236(72.6) | 89(27.4) | 1 ^a | 1 |
| | Over weight | 44(83) | 9(17) | 1.84(0.86,3.930) | 1.47(0.56,3.87) |
| | Obese | 6(54.5) | 5(45.5) | 0.45(0.14,1.52) | 0.73(0.13,4.15) |
| | Under weight | 16(55.2) | 13(44.8) | 0.46(0.22,1.00) | 0.59(0.17,1.44) |
| ASA | ASA1 | 222(71.4) | 89(28.6) | 1.81(0.91,3.61) | 3.55(1.20,10.55)* |
| | ASA2 | 58(84.1) | 11(15.9) | 3.84(1.54,9.54) ¹ | 3.72(1.04,13.28)* |
| | ASA3&4 | 22(57.9) | 16(42.1) | 1 ^a | 1 ^b |
| Body site of surgery | Limbs | 32(68.1) | 15(31.9) | 1 ^a | 1 |
| | Head &neck | 39(75) | 13(25) | 1.41(0.59,3.38) | 1.06(0.28,3.84) |
| | Thoracic | 7(87.5) | 1(12.5) | 3.28(0.37,29.12) | 3.24(0.23,46.39) |
| | Abdominal | 189(70.3) | 80(29.7) | 1.12(0.57,2.16) | 0.66(0.24,1.78) |
| | Spine | 4(100) | 0(0) | | |
| | Genitourinary | 31(81.6) | 7(18.4) | 2.08(0.75,5.78) | 3.37(0.68,16.66) |
| Type of Surgery | Elective | 159(84.6) | 29(15.4) | 3.34(2.07,5.38)** | 0.41(0.15,1.10) |
| | Emergency | 143(62.2) | 87(37.8) | 1 ^a | 1 |
| Surgeon | R1 | 5(55.6) | 4(44.4) | 1 ^a | 1 |
| | R2 | 51(63) | 30(37) | 1.36(0.34,5.46) | 0.98(0.16,6.32) |

*= P value < 0.05, **= p < 0.001,

^a= Significant from bivariate logistic regression model

^b =Significant from multivariate logistic regression model.

| Variables | | Level of satisfaction | | Odd ratio with 95% CI | |
|---|--------|-----------------------|-----------|-----------------------|--------------------|
| | R3 | 85(67.5) | 41(32.5) | 1.67(0.42,6.51) | 0.70(0.11,4.50) |
| | R4 | 65(69.9) | 28(30.1) | 1.86(0.46,7.43) | 1.13(0.17,7.78) |
| | Senior | 96(88.1) | 13(11.9) | 5.91(1.41,24.85)* | 1.28(0.15,10.72) |
| PONB | Yes | 154(95.7) | 7(4.3) | 16.20(7.30,35.95)** | 9.14(3.93,20.86)** |
| | No | 148(57.6) | 109(42.4) | 1 ^a | 1 ^b |
| Analgesics | Yes | 297(73.7) | 106(26.3) | 5.6(1.87,16.77)* | 6.10(1.17,33.91)* |
| | No | 5(33.3) | 10(66.7) | 1 ^a | 1 ^b |
| Information of POPM | Yes | 38(61.3) | 24(38.7) | 0.55(0.31,0.97)* | 0.49(0.22,1.08) |
| | No | 264(74.2) | 92(25.8) | 1 ^a | 1 |
| Intraoperative pain | Yes | 42(58.3) | 30(41.7) | 1 ^a | 1 |
| | No | 260(75.1) | 86(24.9) | 2.16(1.27,3.66)* | 1.31(0.61,2.85) |
| Postoperative pain | Yes | 80(57.3) | 69(46.3) | 1 ^a | 1 ^b |
| | No | 222(82.5) | 47(17.5) | 4.07(2.6,6.48)** | 1.86(1.02,3.39)* |
| Analgesic before request | Yes | 260(86.4) | 41(13.6) | 11.32(6.86,18.69)** | 6.90(3.72,12.83)** |
| | No | 42(35.9) | 75(64.1) | 1 ^a | 1 ^b |
| Analgesic when need it | Yes | 56(72.7) | 21(27.3) | 1.03(0.59,1.79) | |
| | No | 246(72.1) | 95(27.9) | 1 | |
| * = P value < 0.05, ** = p < 0.001, | | | | | |
| ^a = Significant from bivariate logistic regression model | | | | | |
| ^b = Significant from multivariate logistic regression model. | | | | | |

Discussion

Generally from the previous studies, there were no association between patient satisfaction and postoperative pain severity, because most patients are satisfied with the pain management they receive even if they suffer from moderate to severe pain, but there is association between postoperative pain management and patient satisfaction (26-29).

This study showed that the overall proportion of patients who were satisfied with pain management services was 72.2 % [95%CI: 67.7-76.6]. This finding was low compared with other abroad studies (8, 9, 14,

26, 30-35). This could be due to good caring attitude of health care professional, high rate of preoperative pain education, presence of good communication, provides frequent education on pain-related issues for the ward nurses, especially focusing to the frequent measurement of pain assessment (11, 36, 37) and they used non pharmacology pain management methods but not in our study area (10).

But our finding was high compared with recent study, Jimma, Ethiopia, which showed that overall proportion of patients satisfaction, were 50% (38). This discrepancy could be post-operative nerve block was common method of pain management in our study area but not mentioned in that study.

We found that disease status has association with level of satisfaction, ASA1 patients were 3.5 times more likely to be satisfied compared with ASA3&ASA4 patients [AOR=3.55(1.20-10.55)] and also ASA2 patients were 3.7 times more likely to be satisfied compared with ASA3 and ASA4 patients [AOR= 3.72,95%CI=1.04-13.28]. A study conducted in Australia patients with ASA 3 and above were a significant factors for patients dissatisfaction in postoperative pain management survives in univariate odd ratio analysis. However after adjustment ,ASA status was no longer association with patients dissatisfaction (33)

Patients receiving a postoperative regional analgesic technique generally had lower pain scores and a higher level of satisfaction (6, 39-43). In the present study, 95.7% of patients were satisfied with post-operative nerve block which was 9 times more likely to be satisfied compared with patients without nerve block [AOR=9.14,95%CI=3.93-20.86]. This showed that our study had similar finding with other studies (6, 39, 40, 42). This is because of nerve block has superior postoperative analgesia, which may result in higher levels of patient satisfaction (40).

From 418 patients, 15 (3.6%) didn't receive any post-operative analgesic and from this only 5(33.3%) patients were satisfied whereas 10(66.6%) patients were dissatisfied. When compared patients with post-operative analgesic and without analgesic, patients with analgesic 6 times more likely to be satisfied [AOR=6.1:95%CI=1.17-33.91]. In the other studies also, patients who were receive postoperative a pain management service were very satisfied compared with non-treated patients (20, 44).

In the current study, 149 (35.6%) patients were feeling pain immediately after operation. From these group of patients were 1.8 times less satisfied when compared with who didn't feel pain immediately after operation [AOR=1.86:95% CI=1.02-3.39]. Several studies conclude that patients' satisfaction with postoperative pain management was associated with the patients' actual pain experience (9, 19, 27, 36, 45) and have similar finding with this study.

Another factor associated with patient satisfaction in post-operative pain management was using analgesic before request. Patients who received analgesics before request were 6.9 times more likely to be satisfied compared with hadn't received analgesics before request or totally didn't receive analgesic [AOR=6.90:95% CI=3.72-12.83]. This finding also line with the other study and could be the association between pain management and patient satisfaction (46).

In this study patients satisfaction in post-operative pain management has positive association with surgeon seniority. When level of residency increase, level of satisfaction increase. 55.6% of patients were satisfied

with resident one, 63% were satisfied with resident two, 67.5% were satisfied with resident three, 69.9% were satisfied with resident four and 88.1% were satisfied with senior surgeons. Patients underwent operation by senior surgeons were more satisfied compared with resident one (88.1%vs55.6%),This could be explained by the accurate knowledge, skill and experiences of senior surgeons may attribute to less surgical manipulation, short duration of the procedure .However, this was not statistically significant [AOR= 1.28, 95%CI=0.15-10.72].

Limitation of the study: Dichotomized of likert data, leads to loss of information and the space between each choice cannot possible be equidistance. The study didn't include patients discharged before 24 hours and post 24 hours level of satisfaction was not assessed.

Conclusion

¾ of study participants were satisfied with postoperative pain managements. ASA status, pain immediately after operation, post-operative nerve block, post-operative analgesic and analgesic before request were significant determinant factors for patients' level of satisfaction. Therefore pain assessment during immediate postoperative period, providing regular based analgesia before patient request and to promote the practice of post-operative nerve block are important to increase the level of satisfaction.

Abbreviations

ASA: American Society of Anesthesiologists, SPSS: Statistical Package for Social Science, BMI: Body Mass Index, SD: Standard Deviation, GA: General Anesthesia, CI: Confidence Interval; COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio, R: Resident, POPM: Post-Operative Pain Management, PONB: Post-Operative Nerve Block.

Declarations

Ethics approval and consent to participate

Ethical clearance to conduct the research was obtained from ethical review board of school of Medicine, College of Medicine and Health Sciences, University of Gondar. Written informed consent was obtained from each study participant after clear explanation what they would have to do and take part in the study. Anyone not willing to participate in the study was informed that they have full right not to participated or stop at any time and those who were not voluntary were excluded. Confidentiality was guaranteed by keeping the secrecy of personal identification, keeping completed questionnaires and checklist results in well secured area.

Consent for publication

Not applicable

Availability of data and materials

All data generated or analyzed during this study were included in this published article

Competing interests

The authors declared that they have no competing interests

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Not applicable

Authors' contributions

YB: conceived, designed the study, supervised the data collection, and performed the data analysis, interpretation of the result, and drafting the manuscript. DY, GF, YW and HE participated in designing the study, data analysis and data interpretation, editing the manuscript. All authors read and approved the final manuscript

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Figures

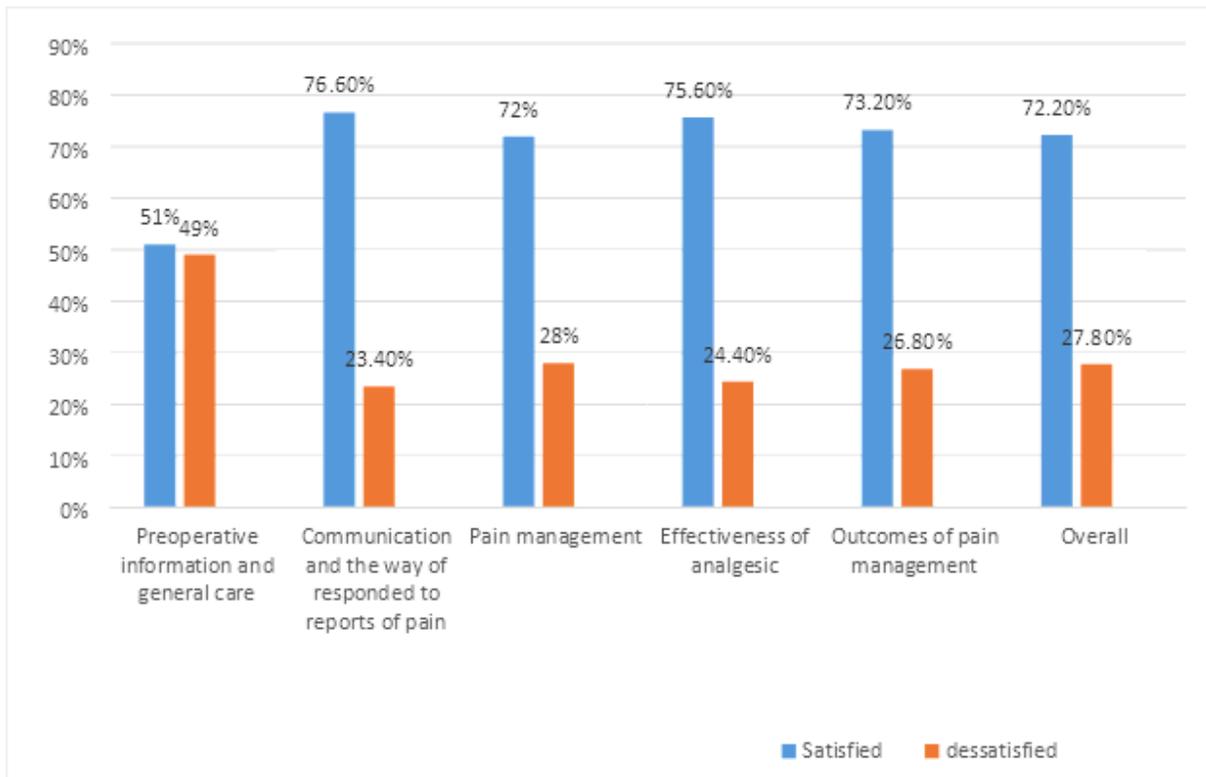


Figure 1

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