

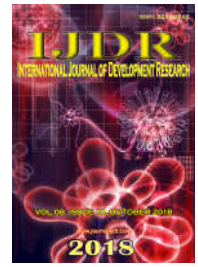


ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research
Vol. 08, Issue, 10, pp. 23843-23849, October, 2018



ORIGINAL RESEARCH ARTICLE

OPEN ACCESS

ASSESSMENT OF POSTOPERATIVE PAIN MANAGEMENT IN MEKELLE PUBLIC HOSPITALS, ETHIOPIA

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ARTICLE INFO

Article History:

Received 28th July, 2018
Received in revised form
07th August, 2018
Accepted 20th September, 2018
Published online 30th October, 2018

Key Words:

Mild pain,
Moderate pain,
Severe pain,
Referral Hospital.

ABSTRACT

Background: Postoperative pain is very common in almost all surgeries. Its inadequate management will result in suffering, increased risk of morbidity and mortality, longer stay in hospital and higher cost. In most developed and developing countries, postoperative pain is not adequately managed. **Objective:** To assess the prevalence of postoperative pain and its management in Mekelle public hospitals. **Methods:** Institutional based cross sectional study was conducted from April to June 2017 among post-surgical patients (n=154). Data on the level of postoperative pain, its management, and socio demographic characteristic was collected using verbal rating scale, data abstraction tool and patient interview respectively. A total of 154 patients that underwent surgery were assessed. **Result:** A total of 154 patients that underwent surgery were assessed; out of whom 152 (98.7 %) had pain of different degrees. Accordingly, mild pain 105 (68.2%), moderate pain 41 (26.6 %), severe pain 6(3.9 %) were reported by the patients. The most frequently used medication to manage postoperative pain was tramadole 65 (42.2 %). The prevalence of moderate to severe postoperative pain in this hospital was found to be 30.5 %. Postoperative pain was insufficiently managed in this hospital. **Conclusion:** Therefore, The finding of this study suggests that post operative pain was not effectively managed. The analgesic choices that were employed to manage post operative pain were also very limited. In addition to this, post operative pain was not assessed using appropriate pain rating scale and was not documented for every patient. **Recommendations:** Assessment of pain should be performed for every post operative patient using appropriate pain rating scales and should be documented and variety of analgesics should be included in the management of post operative pain depending on the level of pain felt by the patient.

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Citation: Dr. Ramesh Shanmugam. 2018. "Assessment of postoperative pain management in Mekelle Public Hospitals, Ethiopia", *International Journal of Development Research*, 8, (10), 23843-23849.

1. INTRODUCTION

1.1 Background:

According to the International Association for the Study of Pain, "pain is defined as an unpleasant sensory and emotional experience associated with actual and potential tissue damage" (IASP, 1994). Genetic makeup, individual behavior, cultural influences, and socio-demographic characteristics like age and sex contribute a lot for the individual variation in perceiving pain (Andrés *et al.*, 2004). Pain can also be divided based on etiology, into nociceptive and neuropathic pain. Nociceptive pain is a type of pain which arises due to or as a result of tissue damage. Postoperative pain can be a good example. Neuropathic pain on the other hand, is a kind of pain that arises from abnormal neural activity secondary to disease or injury of the nervous system. It is further subdivided into sympathetically mediated pain and non-sympathetically mediated pain.

The first one arises from a peripheral nerve lesion and associated with autonomic changes. The second one is due to peripheral nerve damage without autonomic change (Olorunto and Galandiuk, 2006). Surgery is typically followed by acute pain and correctly identifying the type of pain will enable to choose the appropriate and effective type of treatment (Andrés *et al.*, 2004). There are different techniques in assessing pain; self-reported pain assessment tools, physiological and behavioral responses to pain can be of example. The self reporting methods include numeric rating scale (NRS), the Wong-Backer FACES scale and Verbal Rating Scale (VRS). Physiological responses like tachycardia, increased respiratory rate and hypertension may indicate the presence of pain. The behaviors include splinting, moaning, distorted posture and hesitancy to move. Nonverbal methods can provide information regarding pain but the most accurate method is self report (Wells *et al.*, 2008). Both non pharmacologic and pharmacologic methods help to manage postoperative pain. The nonpharmacologic methods can be psycho educational care, which can be expressed in terms of providing health

care information, skills teaching like bed exercise, breathing and coughing; and providing psycho-social support to the patients (Power, 2005). The pharmacologic options include opioid analgesics, NonSteroidal Anti Inflammatory Drugs (NSAIDs) and regional techniques like epidural and spinal anesthesia (Ramsay, 2000). Inadequately managed postoperative pain will have a long and short term consequences. In the short term it will cause suffering, puts patients at higher risk of postoperative morbidity and mortality and will increase hospital stay and hence will increase cost. In the long term acute surgical pain will be followed by chronic pain and will be debilitating to the patient (Katz *et al.*, 1996; Macrae, 2008; Sharrock *et al.*, 1995). Proper management of postoperative pain is crucial in increasing patient satisfaction and patient health outcome. Hence many researches concerning postoperative pain management were performed in different parts of the world (Faponle *et al.*, 2001; Ismail *et al.*, 2012; Tufano *et al.*, 2012). However, there was limited research done to assess the status of postoperative pain management in Ethiopia. Research done in Jimma University Hospital also showed that postoperative pain is not properly managed (Woldehaimanot *et al.*, 2014). Therefore, this research on postoperative pain management would provide information for hospital managers to allocate budget properly so as to use the limited resources efficiently and plan for optimum postoperative pain management. The current study assessed the management and prevalence of postoperative pain among surgical patients in St. Paul's Hospital Millennium Medical College, Addis Ababa between April–June, 2014. In addition, this work identified the factors that contribute for developing postoperative pain.

1.2. Statement of the problem

Postoperative pains are reported to be undertreated in many parts of the world even in developed countries. For example, in France postoperative pain was not adequately managed. Pain intensity monitoring was not also prescribed for all patients and evaluation tools were not standardized (Dominique *et al.*, 2008). A study conducted in a cohort of Danish postoperative patients also found out that 45.5% of patients had uncontrolled pain. They experienced moderate to severe pain within 24 hours of their surgery (Lorentzen *et al.*, 2012). In the United States of America (USA) among surgeries performed within the year, 80% felt acute postoperative pain while the remaining 20% experienced severe pain. This inadequate pain management led to clinical, psychological and institutional consequences (Hutchison, 2007). A study performed to assess the characteristic of pain and patient satisfaction on pain management states that postoperative pain management in rural and urban hospitals of USA was below optimal and strategies for effective pain management was not available (Sherwood *et al.*, 2003). The practice of evaluating pain also varies greatly. A survey conducted in French showed that postoperative pain evaluating tools were with lesser frequency and in all institution the availability of pain was not a criterion for discharge from the recovery room (Fletcher *et al.*, 2008). An interventional study was performed to assess the influence of a nurse controlled intravenous administration of morphine on the quality of postoperative pain management of patients. Before the intervention, patients who were interviewed state that they were never asked about their pain intensity after surgery. Every fourth patient will experience pain more than 3 score by the Visual Analog Scale (VAS), which is not acceptable, without receiving any pain controlling medication (Gross *et al.*, 2002). With the aim of assessing acute postoperative pain at Jordan university hospital, a survey was conducted by collecting data from patient interview and chart review. The study found out that 72% of the patients experience moderate to severe pain postoperatively at rest while 89.3% of patients felt pain on movement. This shows that postoperative pain is not managed adequately in the hospital (Massad *et al.*, 2013). Researches done showed that many factors contribute to the development of pain after surgery. These factors could be of socio demographic, psychological and clinical factors (Caumo *et al.*, 2002; Chesterton *et al.*, 2003; Katz *et al.*, 2005; Lau and Patil, 2004).

1.3. Significance of the study

Generally, postoperative pain is not adequately managed and it is seen to be suboptimal. Coming to the Ethiopian setting, researches are

limited assessing the management of postoperative pain. Therefore, this study will give an insight to what the current status of pain management in Mekelle public hospitals looks like. Hence, the study results would be used as a milestone to give some picture in postoperative pain management in Mekelle public hospitals.

2. LITERATURE REVIEW

Effective management of pain is advantageous in increasing patient satisfaction and wellbeing. It also decreases hospital stay and morbidity associated with surgical intervention. Hence it minimizes the cost of medical care and improves quality of life (Olorunto and Galandiuk, 2006). Postoperative pain is not adequately managed in different parts of the world and its management is different from place to place. A survey conducted in the USA found out that among the study participants, 82% of the patients reported that they experienced pain after their surgery. Of these patients 47% had moderate pain and 39% of them experience severe pain during their recovery period. The most commonly administered pain medications were morphine (33%) and meperidine (27%). When patients were asked about their satisfaction concerning their pain management, 90% of them reported to be satisfied (Apfelbaum *et al.*, 2003). A study was conducted in Denmark to describe the current postoperative pain treatment in Danish tertiary university hospital.

It was found out that postoperative pain was not recorded in most of the patients. It was also observed that greater than 75% of the patients receive opioids. However, sufficient 24 hour treatment was only given to 57%, 85% and 65% of patients during the first, second and third postoperative days respectively (Mathiesen *et al.*, 2012). An observational study conducted in 24 Italian hospitals assessed the current management of moderate to severe postoperative pain in the hospitals. The study found out that among the hospitals only 16.7% provided acute pain service and 41.7% of the hospitals applied a protocol for postoperative pain management. It was revealed that 10% of patients experience moderate pain while 50% of the patients reported to have mild pain and 5% of patients experience severe pain. It was also reported that 20% of the patients did not receive any pain medication even though they were complaining to have pain. Therefore, the study concluded that postoperative pain management with analgesics was still suboptimal (Tufano *et al.*, 2012). Another study which was conducted among Iranian nurses reveals that powerlessness, policies and rules of organization, physicians leading practice, time constraints, limited communication, and interruption of activities relating to pain were some of the barriers influencing management of pain after surgery (Rejeh *et al.*, 2008).

In addition, a study conducted in 14 United Kingdom (UK) hospitals showed that work load, lack of staff, inadequate analgesic prescribing, unavailability of doctors to review medication and not asking patient's pain related questions were barriers not to properly manage pain after surgery (Schafheutle *et al.*, 2001). A study conducted in Thailand aimed to assess the status of postoperative pain management and factors influencing the quality of services. It was found out that in anesthesia care unit anesthesia personnel's prescribed pain medication for 55% of the cases. Intravenous route was the most frequently used mode of administration and it was also reported that there was no postoperative pain management guideline in this unit. In the surgery wards however, 91% of the cases surgeons managed postoperative pain and there was pain assessment record in the wards for 71% of the cases (Charuluxananan *et al.*, 2009). An observational study was conducted in Pakistan to assess the strategy, effectiveness and safety of postoperative pain management. The study found out that postoperative analgesia was given to patients either by the obstetric team or the anesthesia team. Postoperative pain was frequently managed by intravenous infusion of opioids in 94% of patients and other analgesics were also co-administered with the opioids in 99% of patients. The study employed VAS to assess postoperative pain management and found out that pain at rest was mild in 89.7% of the patients, moderate in 9.5% and severe in 0.8% of the patients. Patients' opinion on postoperative pain management was satisfactory in 91.6 % of patients (Ismail *et al.*, 2012). In a survey

conducted in developing countries showed that management of postoperative pain is suboptimal and the analgesics given were not adequate. A questioner survey conducted in Thailand, India, China, Indonesia, the Philippines and Nigeria showed that management of pain is not optimal. In all countries most opioids are available except that oxycodone is not available in India, Indonesia, Thailand and Nigeria. Postoperative pain is managed by surgeons, anesthesiologist or by both in these countries. The frequent reasons given for not adequately managing postoperative pain are lack of potent analgesics, lack of knowledge and not giving priority for pain management (Ballantyne, 2011). A prospective descriptive study which was conducted at the University of Ilorin Teaching Hospital in Nigeria showed that postoperative pain remains a significant problem in the hospital. Drugs used in postoperative pain management were prescribed by surgeons and they were administered by nurses. Pentazocin was prescribed for 86.4% of the patients and the remaining 13.6% of the patients received Tramadol. Most patients, 95% experienced pain during the first period of surgery. And patients report that they have experienced moderate to severe pain in the recovery room (79.6%) and day one of surgery (54.6%) (Kolawole and Fawole, 2003). Postoperative pain can be attributed to different factors which could be of socio demographic, psychological and clinical factors. Female postsurgical patients were found to experience more severe postoperative pain than male patients (Aubrun *et al.*, 2005). However, there was limited research done to assess the status of postoperative pain management in Ethiopia. Research done in Jimma University Hospital also showed that postoperative pain is not properly managed (Woldehaimanot *et al.*, 2014). The current study assessed the management and prevalence of postoperative pain among surgical patients in St. Paul's Hospital Millennium Medical College between April–June, 2014. In addition, this work identified the factors that contribute for developing postoperative pain. Therefore, this research on post operative pain management would provide information for hospital managers to allocate budget properly so as to use the limited resources efficiently and plan for optimum postoperative pain management.

3. Objective

3.1. General Objective

To assess the prevalence of postoperative pain and its management in Mekelle public hospitals.

3.2 Specific Objective

To determine the prevalence of postoperative pain.
To assess the management of postoperative pain.

4. METHODOLOGY

4.1. Study area and Period: The study was conducted between April, 2017 to June 2017 at mekelle town. Mekelle is the capital city of Tigray Administrative regional state located 783 kilometers North part of Addis Ababa, the town is divided into seven sub administrative units; namely Hawelty, Hadnet, Ayder, Semean, Kedamayweyane, Adihaki, and Quiha. Total population of the Mekelle town is estimated to be 340,859 (2009) Mekelle has one referral hospital (Ayder) and three other governmental hospitals which are mekelle, Quiha and North command hospitals.

4.2. Study design: Institutional based Cross sectional study design was employed from April, 2017 to June 2017.

4.3. Source of population: The source population constituted of all patients who undergo surgical procedure in Ayder referral hospital.

4.4. Study population: The study population included sampled adult patients who had surgery and were admitted for recovery n Ayder referral hospital between April–June, 2017.

4.5. Eligibility criteria

4.5.1. Inclusion criteria: All patients who volunteer, age 18 years and above, underwent surgery, and able to communicate were included in the study.

4.5.2. Exclusion criteria: Patients who were not admitted for recovery and unconscious during the data collection period, April, – June, 2017, were excluded.

4.6. Sample Size: The sample size is calculated using single proportion formula (Lwanga and Lemeshow, 1991); prevalence of postoperative pain to be 28.6 %; with margin of error (w) 5% and a confidence interval of 95% ($Z=1.96$). Therefore, the sample size was calculated to be 314. Total surgery in Ayder referral hospital 84 per week. So, we were collected the data within 3 weeks. Then the total surgery within 3 weeks are 252 patients. Therefore, we were used final sample size.

Where: n required sample size
 n_f = Final sample size
 Z = confidence interval
 p = prevalence of post operative pain
 w = margin of error
 N = Total surgery with in 3 week

$$n = \frac{Z^2 p(1-p)}{d^2} = \frac{(1.96^2 \times 0.286)(1-0.286)}{0.05^2} = 314$$

$$\text{Final sample size } (n_f) = \frac{n}{1 + \left(\frac{n}{N}\right)} = \frac{314}{1 + \left(\frac{314}{252}\right)} = \frac{314}{2.246} = 140$$

So with adjustment for non-response (10% contingency) $n_f = (140 \times 10) = 140 + 14 = 154$. Patients who satisfy the inclusion criteria and those who were found during the data collection period were included in the study until the sample size reaches up to 154.

4.7. Sampling Technique and procedure

Out of the four public hospitals in mekelle town, Ayder referral hospital was selected using simple random sampling technique (lottery method) and finally, convenient sampling method was used to select the study participants.

4.8. Study Variables

4.8.1. Dependent Variable: Postoperative pain

4.8.2. Independent Variables: socio demographic characteristics:- Sex, Age, Marital status and Educational status. Type of drug used for pain management, Prescribers' specialty, Intra-operative analgesia and Presence of prior chronic pain.

4.9. Method of data collection

Verbal rating scale, which was nationally recommended to assess pain, was used to extract information on postoperative pain (FMOH, 2007). Data on socio demographic characteristics were collected using patient interview. The verbal rating scale and the patient interview guide was translated in Tigrigna language to make all the questions clear to the patients and were translated back to English to insure consistency of messages. Data on the type of drug used for postoperative pain management, prescriber specialty, route of administration and duration of administration was collected using data abstraction tool.

4.10. Operational definitions

Opioids: medications which have analgesic effect by their own receptors.

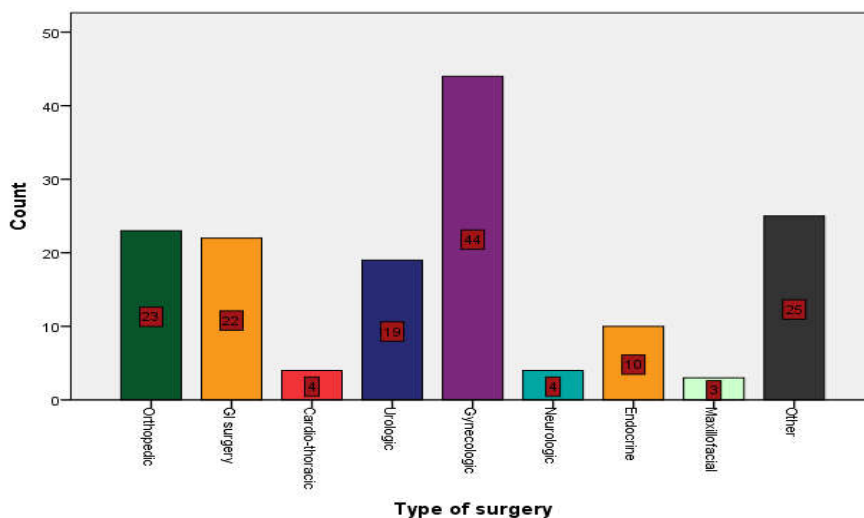
Laparotomy: surgical incision of abdominal wall.

Analgesic: pain killer

Hypertension---abnormally high blood pressure.

Table 1. Socio demographic characteristics of patients (n=154) who underwent surgery in Ayder Referral Hospital between April – June, 2017

Socio-demographic characteristics		Frequency	Percent
Sex	Male	76	49.4
	Female	78	50.6
Age	< 50	115	74.7
	>50	39	25.3
Marital status	Married	121	78.6
	Single	32	20.8
	Divorced	1	.6
Educational level	Illiterate	40	26.0
	Primary school(1-8)	79	51.3
	Secondary school (9-12)	31	20.1
	College diploma(Diploma, degree and above)	4	2.6
Employment status	Employed	9	5.8
	Unemployed	113	73.4
	Private	32	20.8
Religion	Orthodox	146	94.8
	Muslim	7	4.5
	Catholic	1	.6
Ethnicity	Tigraway	142	92.2
	Amhara	10	6.5
	Afar	2	1.3

**Figure 1. Distribution of patients based on the type of surgery in Ayder Referral Hospital between April-June, 2017**

4.11. Data quality control

Questionnaire was prepared first in English and translated in to Tigrigna and back translated to English by different qualified individuals to keep consistency of the data and overall data collection process before the actual time of data collection. Pre test was conducted in 5% similar area or other hospital which was not included in the study as well as correction was done based on the feedback from the pre test. Data was checked and cleaned for completeness and consistency.

4.12. Data analysis and Interpretation

First the data was checked for completeness and consistency. Then it was coded and the data was exported to SPSS version 20 for analysis; descriptive summary using frequencies, proportions, graphs and cross tabs were used to present study results.

4.13. Ethical consideration

Ethical approval was obtained from office of Health Research Ethics Review Committee (HRERC) of College of Health Sciences, Mekelle University. In addition, permission to conduct the research was obtained from the administrative office of the hospital. Before the data collection, verbal consent was obtained from each patient. The study participants were informed about the purpose of the study, why and how they were selected. Moreover, patients were told that they were free to withdraw from the study at any time during the research. Any specific patient identifiers were included in the data collection tool and this was assured by using code numbers to each data and by analyzing the data in aggregate.

4.14. Dissemination of the result

The result of this study was shared to respective administrative offices for appropriate intervention and it was submitted to the department of nursing in partial fulfillment of Bachelor of Science in Operation Room theater (OR) nurse. It was disseminated also to the concerned bodies accordingly.

5. RESULTS

A total of 154 patients above the age of 18 and who were admitted to recovery ward of Ayder Referral Hospital from April 2017 to June 2017 were included in the study.

5.1. Socio-demographic characteristics of study participants

Table 1 below shows the socio-demographic characteristics of the study participants. Among the total of 154 patients 76 (49.4%) were males while 78 (50.6%) were females. Mean age of patients was 41.6 (SD 17.3). The minimum age was 18 and the maximum was 86. Of the total participants, 32 (20.8%) were single, 121(78.6%) were married, 1 (0.6%) were divorced. The educational status of the study participants were college diploma and above 4 (2.6 %), secondary school 31 (20.1 %), illiterate 40 (26 %) and those who were primary level of education account the highest number of participants 79 (51.3 %). Among the total of participants, 9 (5.8 %) were employed, 113 (73.4 %) were unemployed while 32 (20.8 %) were self employed. The religion of the study participants were Orthodox 146 (94.8%), 7 (4.5%) were Muslim and 1 (0.6%) were Catholic. Among the total of participants, 142 (92.2%) were tigray, 10 (6.5%) were amhara and 2 (1.3%) were afar (Table 1).

Table 2. The common surgical procedures performed at Ayder Referral Hospital between April–June, 2017

Procedures	Frequency	Percent
External fixation	7	4.5
Appendectomy	6	3.9
Barr hole	3	1.9
C/S	31	20.1
Cholecystectomy	3	1.9
Elevation	7	4.5
Excision	6	3.9
Exploration	4	2.6
Hemorrhoidectomy	3	1.9
Herniorrphy	4	2.6
Hystrectomy	8	5.2
Incision & drainage	2	1.3
Laparotomy	6	3.9
Nephrolithotomy	4	2.6
ORIF	7	4.5
Skin graft	4	2.6
Striping	3	1.9
STT	11	7.1
Sub totalGastrectomy	3	1.9
TVP	6	3.9
Other	26	16.9

* Cystoscopy, * Fistulectomy, **D/C, **** HellersCarti and ***** Chest tube.

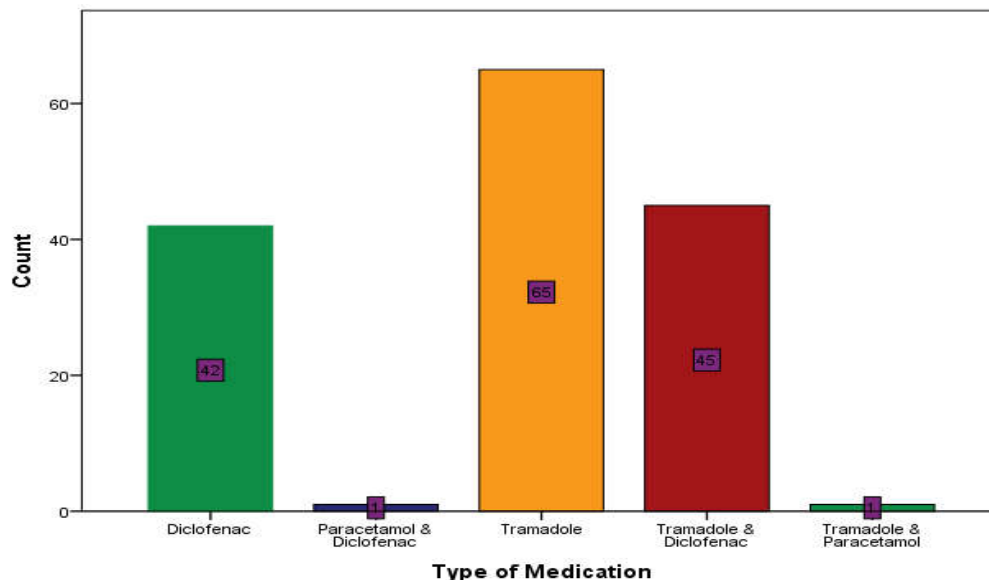


Figure 2. Types of medications prescribed for post operative pain management in Ayder Referral Hospital between April–June, 2017

Table 3. Co-morbidities in surgical patients at AyderReferral Hospital between April–June, 2017

Other comorbidity	Frequency	Percent
Asthma	6	3.9
DM	3	1.9
Epileptic seizur	1	0.6
Hypertention	8	5.2
Others	6	3.9

*Anemia, **Cancer and ***Malnutrition

Table 4. Types of medications prescribed based on the intensity of pain in Ayder Referral Hospital between April–June, 2017

Intensity of pain	postoperative drug name					Total
	Diclofenac N(%)	Paracetamol & Diclofenac N(%)	Tramadole N(%)	Tramadole & Diclofenac N(%)	Tramadole & Paracetamol N(%)	
Mild	39 (37.1)	0	43(41%)	22 (21%)	1(0.1%)	105(100%)
Moderate	3 (7.3%)	1(2.4%)	20(48.8%)	17(41.5%)	0	41(100%)
Severe	0	0	1(16.7%)	5(83.3%)	0	6(100%)
Total	42(27.6%)	1(0.7%)	64(42.1%)	44(29.9%)	1(0.7%)	152(100%)

5.2. Types of surgery done

During the time of the study, different types of surgeries were performed based on the diagnosis of the patients. Out of the total 154 study participants, 44 (28.6 %) patients underwent Gynecological surgery, orthopedic surgery, GI surgery and Urologic surgery were also very common types of surgeries. The overall mean hospital stay after surgery until the date of survey was 2.7 (SD=3.1) days. Shown in Table 2, the most common surgical procedure performed during the data collection period was Caesarean section (C/S) accounting 20.1%

of the procedures with 31 cases. Followed by Subtotal Thyroidectomy (STT) 11 (7.1 %) and Hysterectomy 8 (5.2 %).

5.3. Presence of co-morbidities

Some of the study participants presented with co-morbidities other than their cause of surgery. Among the 154 study participants, 24 (15.6 %) patients had other illnesses. Hypertension was the common co-morbidity present among the study participants. The presence of post operative surgical site infection was assessed in all study

participants and most of the patients, 153 (99.4 %), did not have surgical site infection.

5.4. Assessment of pain

Among the 154 study participants, 152 (98.7%) complained to have post operative pain. Of these, 105 (68.2 %), 41 (26.6 %) and 6 (3.9 %) reported mild, moderate and severe pain respectively. Most of the patients that felt pain after their surgery, 148 (96.1 %) had the pain on the surgical site. The presence of prior chronic pain in the study participants was also assessed and it was found out that 12 (7.8%) patients had chronic pain other than the post operative pain. The current study revealed that 100 (64.9 %) of the patients asked for pain medication and all were provided with analgesics. Among which 80 (80%) received their pain medication in less than one hour of their request. On the contrary, 7 (7 %) patients received their medication after one hour and 13 (13%) patients received their medication within one hour.

5.5. Types of medication used for post-operative pain

At the time of the survey, patients were prescribed with range of analgesics including weak opioids and NSAIDs. The most frequently used medication for the management of postoperative pain was Tramadol 65 (42.2 %) followed by combination of diclofenac with tramadol 45 (29.2 %). Tramadol was used for 42 (27.3 %) of patients. The combination of diclofenac and Paracetamol and tramadol with Paracetamol were also used for few patients as a management of postoperative pain. Figure 2: shows the medications used for post operative pain management. Among patients that felt mild pain 39 (37.1%) received diclofenac for their pain management. Those patients who reported to have moderate pain were mostly given tramadol 20 (48.8 %) and a combination of tramadol with diclofenac 17 (41.5%). Out of 6 patients who felt severe pain, 5 (83.3%) received a combination of tramadol with diclofenac treatment. Intra-operative analgesia was used for 43 (27.9%) patients. Out of these patients, 27 (17.5%) of them were given Pethidine as intra operative analgesia. Tramadol was used for 15 (9.7 %) of the patients. A combination of Pethidine and tramadol were also used intra-operatively for 1 (0.6%) of the patient.

5.6. Prescribers' speciality

In Ayder Referral Hospital, post operative pain was mostly managed by either surgery residents or surgeons. Most of the prescriptions for analgesic medications were written by surgeons 88 (57.1 %) and surgery residents 65 (42.2 %) and some were also written by general practitioners 1 (0.6 %). Anesthetists or anesthesiologists had no role in managing post operative pain. However, intra-operative analgesics were prescribed by anesthesia professionals.

6. DISCUSSION

This study was a cross sectional survey designed to assess prevalence of postoperative pain, its management of post operative pain in Ayder Referral Hospital. Among the study participants 47 (30.5%) of the cases were feeling moderate to severe pain in their post surgical period. This finding shows a higher number of patients than the number reported in other studies done in Nigeria (Faponle *et al.*, 2001; Kolawole and Fawole, 2003). In this study, the number of patients that felt any sort of postoperative pain, 152 (98.7 %), was higher than those reported in the studies done in Nigeria (Faponle *et al.*, 2001; Kolawole and Fawole, 2003). However, as compared to Apfelbaum *et al.* (2003) the current study reported more patients experiencing postoperative pain. This result may be due to the difference between the times of pain assessment after surgery; the study by Apfelbaum *et al.* (2003) assessed post operative pain even after discharge from hospital which may have decreased the prevalence of reported pain. Most patients that participated in this study, 149 (96.8 %), felt their pain at the surgical site. Only Three patients felt their pain other than the surgical site that is due to catheterization. This finding is in accordance with the findings of

Bisgaard *et al.* (2001) which explained the reason to be not using local anesthetics for these patients to reduce incisional pain. The common mode of postoperative pain management in this hospital was administration of Intravenous weak opioid tramadol (42.9 %). While other studies revealed that, continuous intravenous infusions of opioid, namely pethidine and tramadol, were the common modality in postoperative pain management (Ismail *et al.*, 2012; Lorentzen *et al.*, 2012; Ogboli-Nwasor *et al.*, 2012). The Ethiopian pain management guideline also recommends that mono therapy with NSAIDs can only be given for mild pain. NSAIDs should be administered in combination with weak or strong opioids for moderate and severe pains respectively (Federal Ministry of Health -FMOH, 2007). In the current study, physician prescribed nurse administered analgesia is the mainstay of post operative pain management. This is similar to the management seen in Nigeria (Ogboli-Nwasor *et al.*, 2012) but Patient Control Analgesia (PCA) is used in other developed countries (Carr *et al.*, 1998; Grass, 2005). PCA is a mode of administering parenteral drugs, usually strong opioids, for the management of pain in which the patients themselves will administer their own analgesia in a small amount using microprocessor controlled pump whenever they feel pain. This method of administering analgesia is demonstrated to be better than physician prescribed nurse administered.

7. Limitations of the study

Given that the present study employed cross sectional study design, only the level of pain on the date of survey was recorded and did not record the trend of patients' pain over time. Moreover, the current study used retrospective method to assess the presence of any prior chronic pain before surgery. Patients were not addressed preoperatively to assess their pre existing pain which may introduce recall bias.

8. Conclusion

From the findings of this study it can be concluded that most patients were feeling Moderate to severe pain in their post surgical period at Ayder Referral Hospital. The prevalence of moderate to severe post operative pain in this hospital was 30.5 %. The finding of this study suggests that post operative pain was not effectively managed. The analgesic choices that were employed to manage post operative pain were also very limited. In addition to this, post operative pain was not assessed using appropriate pain rating scale and was not documented for every patient.

9. Recommendations

- Based on the findings of the study, the following recommendations can be made:
- ✓ Assessment of pain should be performed for every post operative patient using appropriate pain rating scales and should be documented.
- ✓ Variety of analgesics should be included in the management of post operative pain depending on the level of pain felt by the patient.
- ✓ Documented pain rating scales should be used as a guide for choosing analgesics as well as changing type of medication according to the patients' pain.
- ✓ Similar studies should be done in other institutions to have a general picture of post operative pain management in Tigray.
- ✓ Studies should be conducted to find out the reason for the limited use of opioid analgesics and for the poor practice of pain assessment.

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