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Original Research Article

Adequacy of Postoperative Pain Management among Patients Undergoing Laparotomy at Bugando Medical Centre. Mwanza, Tanzania

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Abstract: ***Background*:** Most patients admitted to the surgical ward undergo laparotomy for various reasons, despite the use of analgesics pain control could remain inadequate. Inadequate postoperative pain management can lead to undesired post-operative complications which increases the risk of morbidity and increased hospital stay. This study aimed to determine the prescription pattern of analgesics, inadequacy of postoperative pain management and its associated factors in the first three days among patients undergoing laparotomy at Bugando Medical Centre. ***Method***: Prospective longitudinal study was conducted at Bugando Medical Centre from April to July 2022, involving 106 adult postoperative patients undergone laparotomy and were admitted to the general surgery wards. Structured questionnaires were used to obtain post-operative information. Postoperative pain severity scores were assessed by using a Numerical Rating Scale (NRS). Data were analysed using STATA v.15. Bivariate analysis and multivariate logistic regression were done. A P-value of <0.05 was considered significant. ***Results***: The types of analgesics commonly prescribed postoperatively were a combination of Pethidine and Paracetamol (67.8%), followed by combinations of Pethidine and Paracetamol with Diclofenac (25.2%) and lastly Pethidine, Paracetamol and Tramadol (7.0%). The prevalence of moderate to severe postoperative pain within 12, 24, 48 and 72 hours were 97.7%, 92.2%, 47% and 21.8% respectively. There was a significant association between sex with the severity of pain. ***Conclusions***: Postoperative pain management was inadequately managed at Bugando Medical Centre. The proportion of postoperative pain in the first twenty-four hours post-operative was the highest. There was no uniformity in the postoperative pain management in our setting and a suboptimal prescription of pethidine was noted. The frequency of pethidine prescription was eight hours instead of four to six hours. Male sex was associated with severe pain.

Keywords: analgesics pain control, longitudinal study, postoperative pain.

INTRODUCTION

Postoperative pain (POP) refers to an unpleasant sensory and emotional experience associated with actual or potential tissue damage after a surgical procedure. POP is precipitated by surgical trauma associated with autonomic, metabolic and behavioural responses [1, 2]. Relief of pain in medical practice can be done by use of analgesia or invasive techniques for temporary or permanent interruption of nociceptive impulses [1-3]. Invasive techniques or permanent interruptions includes regional block like epidural injections, radiofrequency radio ablation by deadening painful nerves, prolotherapy and implantable spinal cord stimulators. As it is always anticipated following a surgical procedure patients will always have pain irrespective of the analgesia used, hence measures can be taken to minimize or eliminate it before or after surgery [4-7]. Pain perception of postoperative patients mostly varies by age, gender, ethnicity tolerance, educational level and patient's pre-operative information given in perception [5-8]. Other factors include the presence of

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higher preoperative pain, ASA physical status, preoperative use of analgesia, type of surgery especially thoracic surgery, abdominal and orthopaedic surgery, duration of surgery and type of anaesthesia [9, 10].

Management of POP in the majority of settings; the most preferred modality of treatment is the Multimodal approach and opioids are highly recommended for severe pain in intensive care units as per the WHO analgesic treatment ladder [9-11]. POP management is still a challenging problem in our setting that does not rely only on the timely provision of analgesics but also on patients based self-report pain concerning treatments [7-15]. There are few studies in our settings that have deduced compelling reasons for challenges in achieving optimal adequate postoperative pain relief. These studies suggest several challenges such as poor documentation of pain management, timely administration of analgesics, hesitance by analgesics avoidance of dangerous side effects, a limited number of healthcare providers, misconceptions and misperception of pain amongst patients and healthcare providers [5-17]. Another reason could be that these recommendations of POP management are not procedure-specific probably because they are derived from data pooled from several surgical procedures. Optimal pain management guidelines are not evidence-based, procedure-specific recommendations are presented as preoperative, intraoperative and postoperative interventions as well as surgical interventions that are easy to access, transparent and relevant to clinicians [18]. Hence Adequate pain control in our study was defined as a reduction of 50% or more of the initial pain level scored on the numerical scale within hours after receiving analgesics [19]. Optimal adequate postoperative pain relief avoids patients from postoperative complications increased hospital stay, thromboembolic events, immobility that led to pressure sore and muscle wasting, postoperative ileus, tachycardia, hypertension, increases cardiac ischemia and increased catabolic stress response to surgery [6].

Studies done to evaluate the adequacy of postoperative pain management in our setting and in many sub-Saharan African countries are still implausible and scanty that's why we feel that racial and ethnic disparities could affect postoperative pain management [11-21].

Tanzania is no different from other countries that are faced with postoperative pain management with guidelines for universal pain management available but still shows laxity in adherence and underreporting due to various reasons [11], which further emphasize the need for the study to assess the adequacy of postoperative pain management among patients undergoing laparotomy and determine the factors associated with its inadequacy in our setting.

RESULTS

Demographic Characteristics

A total of 115 patients who underwent laparotomy at BMC hospital were enrolled. Slightly over half (51.3%) of patients aged above 40 years, the median age was 41 years with an interquartile range of 26 – 53 years. Male patients were 53.9% and females 46.1%, 77.4% of the patients were married and 61.7% resided in rural areas. Sukuma by tribe patients were 45.2% and 36.6 % of all patients had primary education. Patients who reported no history of alcohol intake were 79.1% while 4.4% had exceeded the normal limits of alcohol per week. Table 1 below summarises the socio-demographic characteristics.

Laparotomy-Related Characteristics

Laparotomy was performed emergently in 55.7% of patients. Explorative laparotomies were done for 47% of the patients due to uncertainty in the preoperative diagnosis. A history of the previous laparotomy was seen in 60% of the patients. An extended midline incision was a commonly used incision of 78.3% with a skin closure technique of continuous suturing (62.6%). The majority of laparotomies 60%, were performed by residents and registrars. Table 2 below summarises the laparotomy characteristics of the study patients.

Postoperative Analgesic Prescriptions Patterns

Intraoperative patients were given intravenous stat dosages of monotherapy analgesia with varying dosages of Pethidine. Table 3 below summarizes intraoperative analgesic prescription patterns. Postoperatively Pethidine and Paracetamol was the most preferred analgesic prescription 78(67.8%) and the least prescribed was Pethidine, Paracetamol and Tramadol 8 (7%). Table 4 below summarizes postoperative analgesic prescription patterns.

Table 1: Demographic characteristics of the patients

Variables	*Numbers (n)*	*Percentage (%)*
Age		
Age <40yrs	56	48.7
Age >40yrs	59	51.3
Sex		
Male	62	53.9
Female	53	46.1
Tribe		
Sukuma	52	45.2

Variables	***Numbers (n)***	***Percentage (%)***
Kurya+Nyamwezi	35	30.4
Others	28	24.4
Residence		
Urban	44	38.3
Rural	71	61.7
Marital status		
Single	23	20
Married	89	77.4
Divorced/widow	3	2.6
Education level		
No Formal Education	14	12.1
Primary	41	36.6
Secondary	34	29.6
Tertiary	26	22.6
Alcohol consumption		
Yes	24	20.9
No	91	79.1
Amount of alcohol intake		
Normal Limit	19	16.5
Above Limit	5	4.4

Table 2: Operative characteristics

Variables	***Patient character***	***Number (n)***	***Percentage (%)***
Indication of surgery	Emergency	64	55.7
	Elective	51	44.4
Surgical interventions	Explorative Laparotomy	54	47
	Abdominal wall defect repairs	21	18.3
	Colostomy (closure and formation)	13	11.3
	Appendectomy	12	10.4
	Biliary tree exploration	11	9.6
	Hemi colectomy	2	1.7
	Gastric by-pass	2	1.7
History of the previous laparotomy	Yes	69	60
	No	46	40
Incisions	Extended midline	90	78.3
	Kocher	12	10.4
	Upper Midline	6	5.2
	Lanz	5	4.4
	Others (Pfannestiel & SUMI)	2	1.7
Skin Suturing technique	Continuous	72	62.6
	Interrupted	43	37.4
The rank of Operating doctor	Residents & Registrars	69	60
	Specialists	46	40

Table 3: Intraoperative characteristics

Intraoperative analgesia	***Medication***	***Dose (mg)***	***Number(n)***	***Frequency***	***Route***	***Remarks***
	Pethidine	40	2	*Stat*	Intravenous	Under dose
		50	52			Under dose
		60	1			Under dose
		100	31			Adequate
	Paracetamol	1000	27			Adequate
	Morphine	2	3			Adequate
	Fentanyl	0.05	7			Adequate

Table 4: Below: Postoperative analgesia prescriptions patterns

Postoperative analgesia	***Medication***	***Dose (mg)***	***Number***	***Frequency***	***Route***	***Duration***
	Pethidine & Paracetamol	100	*78 (67.8%)*	*6 hourly*	IM	*24hrs*
				8 hourly		
		1000		8 hourly	IV	72hrs
	Pethidine & Paracetamol & Diclofenac	100	*29 (25.2%)*	*6 hourly* *8 hourly*	IM	*24hrs*
		1000		8 hourly	IV PO	72hrs
		75			IM	72hrs
	Pethidine & Paracetamol & Tramadol	100	*8 (7%)*	*6 hourly* *8 hourly*	IM	*24hrs*
		1000		8 hourly	IV PO	72hs
		100			IM	72hrs

Key; IV= Intravenous, IM = Intramuscular, PO = peroral

Routes of Administration

Intravenous, intramuscular and oral were the most routes of administration used in postoperative pain management (76%). For Paracetamol, the commonly used route was intravenous for 72hours while oral was administered when feeding was initiated. Tramadol and Diclofenac were given intramuscularly in all cases. Table 5 below summarizes the routes of Administration of analgesic combination prescriptions.

Table 5: Routes of Administration of analgesic combination prescriptions

Routes of administration	***Patient Number***	***Pethidine & Paracetamol***	***Pethidine & Paracetamol & Diclofenac***	***Pethidine &Paracetamol & Tramadol***	***Percentage***
	(n)	(n)	(n)	(n)	(%)
Intravenous and Intramuscular	38	27	7	4	33.0
Intramuscular, Intramuscular and Oral	76	50	22	4	66.1
Intramuscular and Oral	1	1	0	0	0.9
Total	115	78	29	8	100

Postoperative Pain assessment of patients

Out of 115 patients, 113 (97.7%) and 106 (92.2 %) patients experienced Moderate to severe pain and within 12 and 24 hours respectively. The remainder 2 (1.7%) patients' experienced mild pain. At 48 hours; 54 (47%) patients had moderate to severe pain and 61 (53%) had mild pain. At 72 hours majority of 90 (78.3%) patients experienced mild pain while 25 (21.7%) patients still reported having moderate to severe pain. Table 6 and Figure 1 below summarize the percentage of post-operative Pain scores.

Table 6: Post-operative Pain scores

Postoperative hours	***Mild pain Score (1-3)***	***Moderate pain Score (4-6)***	***Severe pain Score (7-9)***	***Intolerable Score (10)***
	n (%)	n (%)	n (%)	n (%)
12 Hours	2 (1.7)	32 (27.8)	78(67.3)	3 (2.6)
24 Hours	9 (7.8)	66 (57.4)	39 (33.9)	1 (0.9)
48 Hours	61 (53)	53 (46.1)	1 (0.9)	0 (0.0)
72 Hours	90 (78.3)	24 (20.9)	1 (0.9)	0 (0.0)

Amongst the 115 patients, 75(65.2%) patients experienced moderate to mild pain in the first 24 hours post laparotomy. The remainder 40 (34.9%) had Severe to intolerable pain. Figure 3 below summarizes the frequency of pain scores at 24 hours.

Postoperative pain was not assessed in all of the post-operative patients during ward rounds. Despite no documentation on the severity of patients' pain, drug prescriptions continued, and new medications were added while some switched routes or stopped.

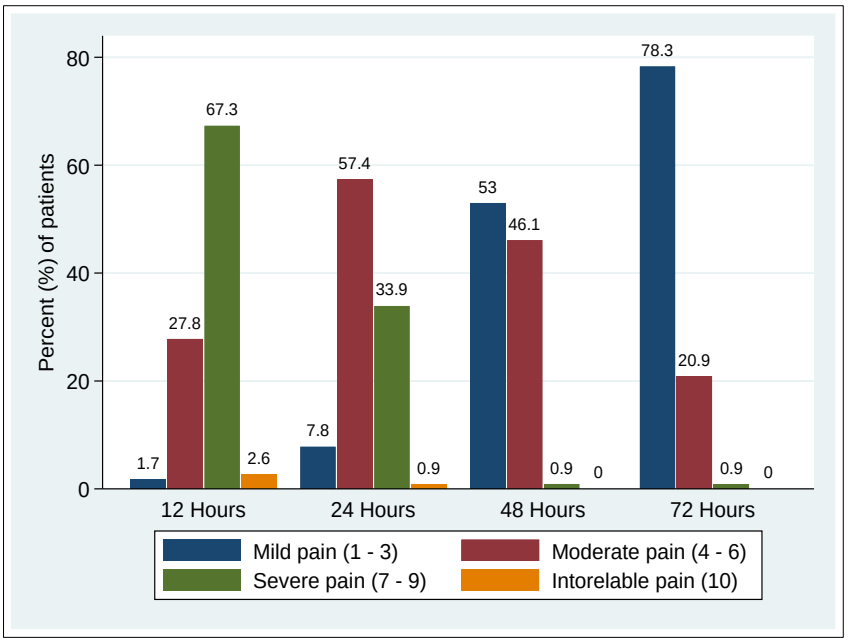

Figure 1: Percentage distribution of patients' pain scores done in 72 hours postoperative

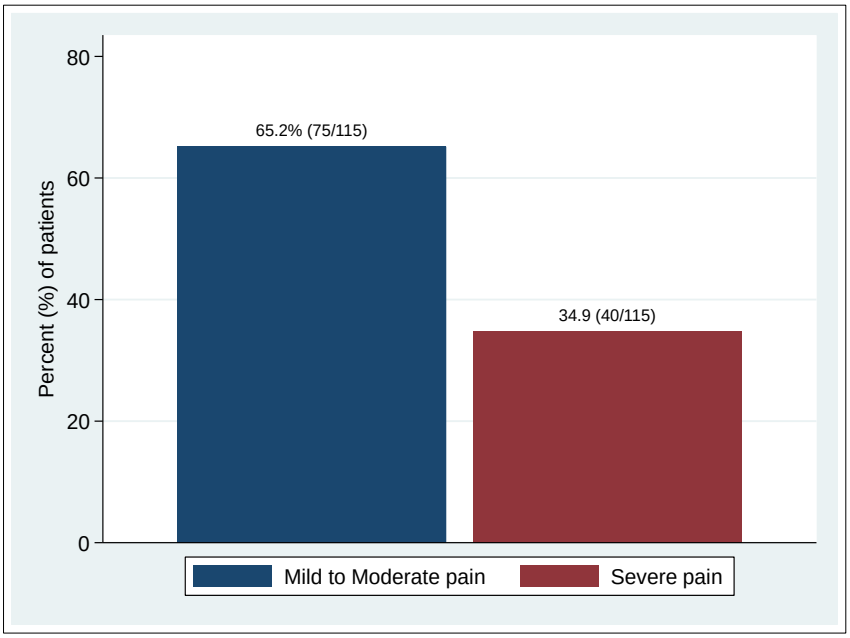

Figure 2: Postoperative pain scores at 24 hours.

Factors associated with inadequacy of pain management.

Factors which showed an association with pain severity on univariate analysis were 8 hourly frequency of Pethidine administration (OR 7.1 CI: 2.8-18.1 p-value = 0.001). Multivariate logistic regression was then done and found an association between pain severity in patients with no formal education (OR 7.1 CI: 1.2-39.3 p-value=0.024), primary education (4.6(1.3 – 16.4), p-value 0.019) and 8 hourly frequency of Pethidine. Table 7 below summarizes the factors associated with Pain Severity.

Table 7: Factors Associated with Pain Severity bivariate analysis

Patients characteristics	**Pain scores at 24 Hours**		**Univariate**		**Multivariate**	
	Severe	**Non-Severe**	**OR [95% CI]**	**p-value**	**OR [95% CI]**	**p-value**
	n (%)	n (%)				
Sex						
Female	14 (26.4)	39 (73.6)	1.0	-	-	-
Male	26 (41.9)	36 (58.1)	2.0 [0.9- 4.4]	0.084	3.1 [1.3 – 7.9]	0.016

Age groups						
<40Years	20 (33.9)	39 (66.1)	1.0	-	-	-
>40Years	20 (35.7)	36 (64.3)	1.1 [0.5-2.3]	0.838	-	-
Tribe						
Sukuma	20 (38.5)	33 (62.3)	1.0	-	-	-
Kurya	4 (18.2)	18 (81.8)	0.6 [0.2- 1.4]	0.219	0.4 [1.0 - 1.4]	0.140
Nyamwezi	5 (41.7)	7 (58.3)			1.4 [0.4-3.70]	0.804
Others	11 (39.3)	17(60.7)	1.1 [(0.4-2.7]	0.942	1.3 [0.5- 5.13]	0.70
Education						
Tertiary	6 (23.1)	20 (76.9)	1.0	-	-	-
Secondary	10 (29.4)	24 (70.6)	1.3 [0.4- 4.2]	0.683	1.2 [0.3- 4.7]	0.824
Primary	18 (43.9)	23 (56.1)	2.7 [0.9 -8.3]	0.082	2.5 [0.6- 9.7]	0.191
No Formal	6 (42.9)	8 (57.14)	3.2 [0.8- 13.9]	0.113	3.1 [0.5-20.6]	0.228
Duration of surgery						
<2Hours	23 (35.9)	41 (64.1)	1.0	-	-	-
>2Hours	17 (33.3)	34 (66.7)	7.1 [2.8- 18.1]		-	-
Urgency of Laparotomy						
Emergency	20 (31.3)	44 (68.8)	1.0	-	-	-
Elective	20 (39.2)	31 (60.8)	1.4 [0.7-3.1]	0.77	-	-
Analgesic prescription						
Pethidine&Pcm	25 (32.1)	53 (68.0)	1.0	-	-	-
Pethidine&Pcm & Diclofenac	11 (37.93)	18 (62.1)	1.3 [0.5- 3.1]	0.568	-	-
Pethidine&Pcm &Tramadol	4 (50.0)	4 (50.0)	2.1 [0.5-9.1]	0.315	-	-

DISCUSSION

Post-operative pain management was studied in patients recovering from laparotomy prospectively over a period of three months at Bugando Medical Centre. Postoperative pain management was a commonly encountered problem at Bugando Medical Centre in the majority of patients undergoing laparotomy despite the use of analgesics for pain management. In this study, the proportions of patients who reported moderate to severe pain within 12 to 24 hours postoperative were very high with 97.7% and 92.2% respectively. These findings were similar to some and different to other studies done in Tanzania and Ethiopia [13-26]. In a study done at a regional hospital in Dar-es-salaam, Tanzania, reported a high proportion of POP in 12 hours (95.6%) similar to the study. The observed similarity was because patients' pain assessments were done with no regard to movements and there was no clear established protocol for POP management [24]. While in Ethiopia, the proportion was high at 95.2% and 92.4% similar to our study with the coinciding fact of no uniform established protocol for POP management and analgesics chosen were biased by surgeon's preferences. Another study done at KCMC in Tanzania reported a lower proportion of POP within 24 hours (40.3%). In a study done at BMC, the proportion of moderate to severe POP in women undergone caesarean was 68.6% [13]. The difference observed could be due to the difference in pain assessment done to patients in our study at rest (immobile) for 24 hours contrary to the ones at KCMC and BMC who were in motion or post ambulation/ physiotherapy with pain perception destructed and cognitive focused away from pain, as a result, POP scored less than that was obtained at rest in our study. Physiotherapy such as early ambulation with eight hours postoperative contributes to muscle relaxation hence reducing muscular tension which reduces pain perceived postoperatively [13]. The observed high proportion could also be explained with the type of anesthesia used, whereby patients in our study were operated under general anesthesia.

While in two studies done in Tanzania majority of surgeries were done under regional anesthesia which lasts longer and blocks pain locally postoperative [13-31]. Conclusively the high proportions in various studies inclusive with ours could also be explained by variations in the analgesics prescription patterns and a lack of a uniform postoperative pain management protocol/modality in Tanzania.

The type of analgesics commonly prescribed postoperatively was a combination of Pethidine and Paracetamol in all three analgesic prescription combinations. The distribution of three common postoperative prescriptions of analgesia prescribed was Pethidine plus Paracetamol combination (67.8%), Pethidine plus Paracetamol plus Diclofenac combination (25.2%), Pethidine plus Paracetamol plus Tramadol (7.0%). In this study the use of injectable pethidine as the main analgesia is similar to that of other studies done in BMC, MNH, KCMC and Ethiopian Hospitals [9-26]. In studies done at Bugando Medical Centre, MNH and KCMC on POP management had injectable pethidine as commonly used analgesia in first 24hours with (98.7%), 98% and 91.1% respectively similar to our study (100%). The similarities could be due to the easy affordability and availability of pethidine injection in resource-limited settings. The difference was in the adjunct drugs given in

48 hours in combinations used whereby at BMC injectable diclofenac was (94.7%), paracetamol (2.3%) and tramadol (0.3%) in our study paracetamol (100%), diclofenac 25.2% and tramadol (7%). In our study, multimodal analgesia with at least two common drugs combination was used in all patients consisting of three analgesic drugs similar to other studies done in East Africa [9-32]. The use of Multimodal pain management was a good positive footstep toward controlling pain as far as advantages of multimodal therapy are concerned. The high discrepancy in the severity of pain among patients who were treated with different medications in our study and others could probably be due to the.

Variations in the prescription patterns and the choice of drugs by surgeons as part of the multimodal therapy. There was a noted difference in the same analgesia administration routes whereby some patients it was prescribed intravenously but given intramuscular similar to. In our study, surgeons were the only prescribers of analgesics leaving nurses as drug administrators though procedures such as wound dressing, drain removals and stitch removals which also induced pain were done by them similar to other studies done in Tanzania [9-31] and Ethiopia [26].

In this study, the route and dosages of the same analgesic prescribed were similar among patients receiving different prescription combinations following a laparotomy and were also similar to other studies. Pethidine, Tramadol and Diclofenac were administered intramuscularly at dosages of 100mg, 100mg and 75mg respectively. These dosages and routes were similar to other studies done in Tanzania that investigated postoperative pain management [9-31]. The similarity in the route of administration of these analgesics could be due to avoidance of adverse effects and easy administration though it induces pain at every administration [9-24]. Intramuscular administration of 100mg of Pethidine avoids adverse effects associated with its intermittent intravenous route. Evidence-based studies also caution on surgical patients may show marked variability in the absorption of intramuscular drugs such as Pethidine and volume of distribution due to vasoconstrictions and anxiety hence difficult to predict the drug effect and adequacy of pain control [9, 14]. In this study, Paracetamol was administered intravenously to all patients and sometimes switched to the oral route for patients who were eligible to start feeding similar to other studies [13, 14].

The frequencies of administration of Paracetamol, Diclofenac and Tramadol were all given at an interval of eight hours similar to other studies which investigated POP and prescription patterns [9-32]. There was a variation in the frequency of administration of Pethidine, as the majority of patients (54.8%) in our study received intramuscular dosages at an interval of eight hours while the rest at six hours. In a study from MNH on POP management and its adequacy in 250 patients, intramuscular pethidine (77.9%) was found to be prescribed at intervals of eight hours postoperatively. This was due to a shortage of nursing staff, avoidance of adverse effects and poor documentation of the last tracking time the patient was injected. In our study, the results were similar however the frequency of administration of intramuscular pethidine was 54.8% at eight hourly intervals and there was proper documentation. This was different from KCMC's [13] study which investigated POP and satisfaction where Pethidine was commonly prescribed six hourly but at a lesser dosage. These findings are comparable to the studies done at BMC, MNH KCMC and Kenyatta National Hospital [11-31]. Pethidine has a half-life of 3-4 hours, rapid onset with a peak plasma time of 20 to 40 minutes for intramuscular administration [32]. Its useful analgesic effect can last up to four hours in parental/intramuscular administration [14-33] The quality analgesic effect can be improved by giving it four-hourly, unlike in our study where the majority had intermittent Pethidine administration at an interval of 8 hours which could have led to an increase of prevalence in the severity of postoperative pain [14-33].

In our study, moderate to severe postoperative pain (POP) experienced by patients in the first 12,24,48 and 72 hours were proportionally high at 97.7%, 92.2%,47% and 21.8% respectively. Despite the observed high proportions of POP, significant improvements were seen in drastic subsiding of pain severity scores at 48 hours and 72hours postoperatively in our study. These observed subsiding pain scores could be due to initiations of ambulation, physiotherapy and some feeding despite the analgesic combination administered. These findings in our study were still high as compared to others [9-34]. In studies done at KCMC [13], and BMC [31], where patients were assessed after ambulation and physiotherapy, it was observed that their pain perceptions were destructed and cognitively focused away from pain which resulted in less scored POP than that obtained at rest in our study. It's reported in studies [13-35], that physiotherapy contributes to muscle relaxation hence reducing muscular tension which reduces pain perceived postoperatively. The observed high proportion also could be attributed to the fact that most patients were kept on various analgesic prescription combinations with variable frequencies of administration of drugs such as pethidine [32]. It was observed that there was no clear established uniform protocol or guideline for postoperative pain management in our setting. Most POP management prescriptions were surgeon's preferences which were also not evidence-based or procedure-specific hence left patients subjected to pain for several hours while waiting for the subsequent doses similar to studies done at MNH [9-14]. In this study, the route mostly used to administer Pethidine, diclofenac and tramadol postoperatively was intramuscular. This could also explain the high proportions of pain severity scores due to subsequent infliction of pain every time analgesics were administered and still had unpredictable drug effects.

Different factors were associated with the pain severity that led to the inadequacy of postoperative pain management. Sex was associated with severe pain and inadequacy of POP management in multivariate analysis. In our study, findings show male gender were associated with the severity of pain in twenty-four and forty-eight hours postoperatively similar to other studies [13-24]. No sufficient reason for this finding in our study to explain why the male gender patients were more likely to be predispose to severe postoperative pain. Other studies which were done in Tanzania [13], and Ethiopia [28-34], could not elucidate the reasons in their studies.

In our study, patients were administered three different combinational analgesic prescriptions, paracetamol and Pethidine were the common analgesics given in all combinations. Among all combinations, a combination of Paracetamol and pethidine only was given to 78 (67.8%) of all patients had 32.1% of patients with severe pain at 24hours.A combination with paracetamol, pethidine and Diclofenac was given to 29(25.2%) and had 37.9 % of patients with severe pain. While a combination of Paracetamol, pethidine and Tramadol was given to 8 (7.0%) of all patients had 50% of patients with severe pain at 24hours.There was no significant difference in between the combinations as no analgesics were superior to the other in managing POP.

In this study, there was no association between age, tribe, marital status, educational level duration of surgery with the severity of pain. These findings are similar to other studies done in Tanzania [9-24]. These similarities in findings could be explained by the similarities in study methodologies, socio-cultural disparity among the study populations, hospital settings and quality of care.

CONCLUSION

Postoperative pain (POP) management was inadequately managed in the first three days among patients undergoing laparotomy. The prevalence of postoperative pain was high, especially in the first twenty-four hours due to the absence of a uniform Postoperative pain (POP) management protocol or guideline although the modality of delivery of the medication was similar in all patients. Most surgeons used their preference protocols or guidelines for optimal pain management which were neither evidence-based nor procedure-specific recommended in intraoperative and postoperative interventions.

In this study, the route that was commonly used to administer pethidine was intramuscular which can be associated with erratic absorption and volumes of distribution hence difficulties in predicting the drug effects and adequacy of pain control. Injectable Pethidine was being prescribed at a frequency of eight hours instead of four to six hours. However there was no under or missed dosing of analgesic observed among participants.

In this study, patients were administered three different combinational analgesic prescriptions. Paracetamol and Pethidine were the common analgesics given in all combinations though no significant difference was found in between the combinations as no analgesics were superior to the other in managing POP. Hence in the making uniform Postoperative pain (POP) management protocol, a suggestion of inclusion of Paracetamol and Pethidine due to their availability, affordability and interaction of a common Intravenous route that can be used from intraoperative access. In this study, Postoperative pain (POP) was not assessed in all post-operative patients during routine ward rounds, despite no documentation on the severity of patients' pain, drug prescriptions continued, and new medications were added while some switched routes or stopped.

REFERENCES

1. Dahl, J., & Kehlet, H. (2006). *Postoperative pain and its management.* Wall and Melzack's Textbook of Pain, 635-651.
2. Merskey, H., & Bogduk, N. (1994). *Classification of chronic pain, IASP Task Force on Taxonomy.* Seattle, WA: International Association for the Study of Pain Press (Also available online at www. iasp-painorg).
3. Merskey, H., & Bogduk, N. (1994). *IASP Task Force on Taxonomy. Classification of chronic pain.* The International Associationfor the Study of Pain.
4. Afshan, G., Khan, R. I., Ahmed, A., Siddiqui, A. S., Rehman, A., Raza, S. A., ... & Mustafa, K. (2021). Post-operative pain management modalities employed in clinical trials for adult patients in LMIC; a systematic review. *BMC anesthesiology*, *21*(1), 160.
5. Kolawole, I. K., & Fawole, A. A. (2003). Postoperative pain management following caesarean section in University of Ilorin Teaching Hospital (UITH), Ilorin, Nigeria. *West African journal of medicine*, *22*(4), 305-309.
6. Ocitti, E. F., & Adwork, J. A. (2000). Post-operative management of pain following major abdominal and thoracic operations. *East African medical journal*, *77*(6).
7. Ogboli-Nwasor, E., Sule, S. A. T., & Yusufu, L. M. (2012). Pattern of postoperative pain management among adult surgical patients in a low-resource setting. *Journal of pain research*, 117-120.
8. Lorentzen, V., Hermansen, I. L., & Botti, M. (2012). A prospective analysis of pain experience, beliefs and attitudes, and pain management of a cohort of D anish surgical patients. *European Journal of Pain*, *16*(2), 278-288.
9. Samwel, R., & Boniface, R. (2019). Pain management and factors associated with its severity among post surgical patients admitted in the intensive care unit at Muhimbili National hospital, Tanzania. *Open Journal of Anesthesiology*, *9*(2), 23-33.

10. Subramanian, P., Ramasamy, S., Ng, K. H., Chinna, K., & Rosli, R. (2016). Pain experience and satisfaction with postoperative pain control among surgical patients. *International journal of nursing practice*, *22*(3), 232-238.
11. Ocitti, E. F., & Adwork, J. A. (2000). Post-operative management of pain following major abdominal and thoracic operations. *East African medical journal*, *77*(6).
12. Subramanian, P. (2014). *Pain experience and satisfaction with postoperative pain control among surgical patients. International Journal of Nursing Practice*, *22*.
13. Masigati, H. G., & Chilonga, K. S. (2014). Postoperative pain management outcomes among adults treated at a tertiary hospital in Moshi, Tanzania. *Tanzania journal of health research*, *16*(1).
14. Makia, M. I. (2004). *Post operative pain therapy prescribing patterns and adequacy of post operative analgesia, at Muhimbili National Hospital Dar es Salaam Tanzania* (Doctoral dissertation, Muhimbili University of Health and Allied Sciences).
15. Mwafongo, V. Y. C. (1994). *Attitudes and Knowledge of Nurse towards postoperative analgesic care in the surgical, Obstetric and ICU wards at Muhimbili Medical Centre.*
16. Abdalrahim, M. S., Majali, S. A., & Bergbom, I. (2008). Documentation of postoperative pain by nurses in surgical wards. *Acute pain*, *10*(2), 73-81.
17. Garimella, V., & Cellini, C. (2013). Postoperative pain control. *Clinics in colon and rectal surgery*, *26*(03), 191-196.
18. Joshi, G. P., & Kehlet, H. (2019). Postoperative pain management in the era of ERAS: an overview. *Best Practice & Research Clinical Anaesthesiology*, *33*(3), 259-267.
19. Sokoloff, C., Daoust, R., Paquet, J., & Chauny, J. M. (2014). Is adequate pain relief and time to analgesia associated with emergency department length of stay? A retrospective study. *BMJ open*, *4*(3), e004288.
20. Campbell, C. M., & Edwards, R. R. (2012). Ethnic differences in pain and pain management. *Pain management*, *2*(3), 219-230.
21. Ezenwa, M. O., & Fleming, M. F. (2012). Racial Disparities in Pain Management in Primary Care. *Journal of health disparities research and practice*, *5*(3), 12-26.
22. Kolawole, I. K., & Fawole, A. A. (2003). Postoperative pain management following caesarean section in University of Ilorin Teaching Hospital (UITH), Ilorin, Nigeria. *West African journal of medicine*, *22*(4), 305-309.
23. Ogboli-Nwasor, E., Sule, S. A. T., & Yusufu, L. M. (2012). Pattern of postoperative pain management among adult surgical patients in a low-resource setting. *Journal of pain research*, 117-120.
24. Mwashambwa, M. Y., Yongolo, I. M., Kapalata, S. N. W., & Meremo, A. J. (2018). Post-operative pain prevalence, predictors, management practices and satisfaction among operated cases at a Regional Referral Hospital in Dar es Salaam, Tanzania. *Tanzania Journal of Health Research*, *20*(2).
25. Mwaka, G., Thikra, S., & Mung'ayi, V. (2013). The prevalence of postoperative pain in the first 48 hours following day surgery at a tertiary hospital in Nairobi. *African health sciences*, *13*(3), 768-776.
26. Mayer, D. J., & Liebeskind, J. C. (1974). Pain reduction by focal electrical stimulation of the brain: an anatomical and behavioral analysis. *Brain research*, *68*(1), 73-93.
27. Wang, F. (2015). Epigenetic Modification of Nociceptive Mediators: Implications for the Etiology of Neural Hypersensitivity (Part II). *Science Insights*, *12*(3), 429-434.
28. Jin, F., & Chung, F. (2001). Multimodal analgesia for postoperative pain control. *Journal of clinical anesthesia*, *13*(7), 524-539.
29. Lovich-Sapola, J., Smith, C. E., & Brandt, C. P. (2015). Postoperative pain control. *Surgical clinics*, *95*(2), 301-318.
30. Hudcova, J., McNicol, E. D., Quah, C. S., Lau, J., & Carr, D. B. (2006). Patient controlled opioid analgesia versus conventional opioid analgesia for postoperative pain. *Cochrane Database of Systematic Reviews*, (4).
31. A, I. (2018). *Postoperative pain management among women who underwent caesarean section at Bugando Medical centre* .unpublished doctoral dissertation at CUHAS Library.
32. Bagi, I. A., & Ahmed, M. E. (1993). Postoperative pain and analgesic prescription in Khartoum: evaluation of current practice. *East African medical journal*, *70*(8), 502-505.
33. Tamsen, A. (1982). Patient-controlled Analgesic Therapy, Part I: Pharmacokinetics of Pethidine in the Per- and Postoperative Periods. *Clinical Pharmacokinetics*, *7*(2), 149-163.
34. Bagi, I. A., & Ahmed, M. E. (1993). Postoperative pain and analgesic prescription in Khartoum: evaluation of current practice. *East African medical journal*, *70*(8), 502-505.
35. Bullmann, V., Weber, T. P., Kienle, B., & Schulte, T. L. (2008). Value of adjuvant physiotherapy in postoperative pain management. *Der Orthopäde*, *37*, 997-999.

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