Original Article

Evaluation of Use Pattern of Analgesics in Post-Operative Pain Management among Surgically Treated Patients in a Tertiary Hospital in Khulna, Bangladesh.

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ABSTRACT:

Background: *Effective management of postoperative pain provides a significant successful outcome of any surgical cases.*

Objectives: This study was designed to address the evaluation of using analgesics in relieving postoperative pain.

Methods: *After taking proper approval from hospital administration a prospective observational study was conducted in 250 surgically treated patients from January 2019 to May 2019 in a tertiary care hospital where patient of all ages and both sexes were included and prescriptions which did not contain analgesics were excluded from the study. Data was collected from day of operation to 5th post- operative day (POD) of each individual patient. Analysis of data was done by SPSS of 18.0 version.*

Results: *Among 250 patients recruited 165 (66%) patients were female and highest numbers of patients were in the age group 18- 37 years 180 (72%). In the day of operation opioid tramadol and non-opioid diclofenac was mostly prescribed analgesic. Associated analgesics were pethidine and or ketorolac. Among different combinations of analgesics, ketorolac & diclofenac combination 33% is used in highest cases. Average number of analgesic was 2.1 in the day of operation which became 1 in 5th POD. Percentage of patients prescribed analgesics from national essential drug list was 22%. The most common route of administration was intravenous (91.6%). Oral form was prescribed in 4th & 5th postoperative day.*

Conclusion: *These results emphasize that a further study is needed to improve analgesic use by following standard treatment guideline to achieve effective pain management.*

Key words: *analgesic, postoperative pain, diclofenac.*

(The Planet 2021; 5(1): 62-68)

INTRODUCTION:

Severe pain after surgery is a major problem affects millions of patients world-wide.[1,2] Pain is classified as a serious public health problem both in the developed and in developing countries. [3] Postoperative pain is one of the most prevalent types of acute pain

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and is an expected result of surgical procedures.[4,5] More than 80% of patients who undergo surgical procedures experience acute postoperative pain and approximately 75% of those with postoperative pain report the severity as moderate, severe, or extreme.[6] Post-operative pain is one of the end results of any surgical procedure and calls for efficient management.[7]Effective pain management is a national and global challenge.[8] Insufficient or inappropriate post-operative pain management can result in excess morbidity& mortality, delays recovery, as well as lead to chronic pain, risk of post-surgical complications like deep vein thrombosis, atelectasis, delayed wound healing and also increasing total health care costs by increases the use of health care resources.[1,4,6,7,9,10] Ultimately lack of integration of knowledge and practice of post-operative pain management by health care professionals negatively affects patients quality of life, resulting in unnecessary physical, psychological, and emotional disturbance.[6,8] As pain is a subjective feeling, different class of analgesics required to the patients may differ. Analgesics should be used with a better safety profile, having less tolerance, dependence and abuse potential.[7] Among analgesics, morphine is considered a gold standard to alleviate pain extensively after major surgery[2,7] but it has limits: moderate efficacy on movement, side-effects which can be incapacitating for the patient and delay postoperative rehabilitation.[2] The introduction of Adjuvant agents including non-steroidal anti-inflammatory drugs (NSAIDs) is one of the most widely used non opioid analgesics for management of postoperative pain and chronic pain which should be used alone or in combination with opioids [2,7,11-13] on the basis of 'multimodal analgesia' the use of several different classes of analgesics and different routes of administration can produce a synergistic action which also helps to reduce the effective doses and their adverse effects of individual drugs. According to "analgesic ladder" which is devised by the World Federation of Societies of Anesthesiologists (WFSA), immediately after an operation, the severe pain may need controlling with strong parenteral opioids in combination with local anesthetic blocks and peripherally acting drugs. Normally postoperative pain should decrease with time and the need of injection should cease. There is then a step down to oral opioids and finally to non-steroidal anti-inflammatory drugs (NSAIDs).[7] we would like to emphasize that untreated postoperative pain is a highly preventable issue, which can easily be solved. Hence, information with the objective of evaluating an analgesic's using patterns is considered as of high relevance in order to optimize in post-operative pain management among surgically treated patients in a tertiary hospital in Khulna, Bangladesh.

METHODS & MATERIALS:

After taking proper permission from hospital administration, this prospective observational study was carried on 250 patients in a surgical unit from January 2019 to May 2019 conducted by the department of Pharmacology in collaboration with

Surgery and allied Departments of Khulna Medical College Hospital in Khulna. Patient of all ages and both sexes undergoing surgery who had a stay of at least one-day post operatively were included in the study whereas patients suffering from co-morbid condition (diabetes mellitus, hypertension and any cardiac diseases) and the prescriptions which did not contain analgesics were excluded from the study. Data was collected in a pro-forma from the day of operation to 5th post- operative day of each individual patient. Analysis of data was done with the help of computer by SPSS program version of 18.0 software facilities.

RESULTS:

On the basis of inclusion and exclusion criteria, out of total 250 patients recruited, highest numbers of patients were in the age group of 18- 37 years 180 (72%) and majority of the patients were female 165 (66%) where maximum prescription containing analgesics were from general surgery ward showed in Table 01. Different combinations of narcotic and non- narcotic analgesics used in surgically treated patient. Among them ketorolac & diclofenac combination were used highest 33% cases, and three analgesics (pethidine +ketorolac +diclofenac) combination were also found in 22% cases. Rest of the combination pattern showed in Figure 01. All the analgesic prescribing frequency from 0 POD to 5th POD showed in Figure 02. Tramadol was the most commonly prescribed narcotic analgesics in 0 POD 72(28.8%), second most common drug was pethidine 55(22%). Diclofenac was the most commonly prescribed non- narcotic analgesics in 0 to 5th POD followed by Ketorolac, nalbuphine. Table 02 highlights the indicators assessed. The average number of analgesics per encounter was 2.1 in the day of operation and at 5th POD it became one (01). Pethidine was the only drug to be prescribed as generic in 22% of all analgesics prescribed and it was the only drug prescribed (22%) from essential drug list of Bangladesh. 91.6% analgesics were administered via parenteral (IV) route upto 3rd POD and it was switched over into enteral (oral and or suppository) route in 4th & 5th POD.

Table 01: Demographic features & the department involved

Demographic results		**No. & percentage (n = 250)**
Age (Years)	<18	13 (5.2%)
	18-37	180 (72%)
	38-57	38 (15.2%)
	>57	19 (7.6%)
Sex	Female	165 (66%)
	Male	85 (34%)
Surgery	General	142 (56.8%)
	Gynaecology	55 (22%)
	Urology	32 (12.8%)
	Otolaryngology	21 (8.4%)

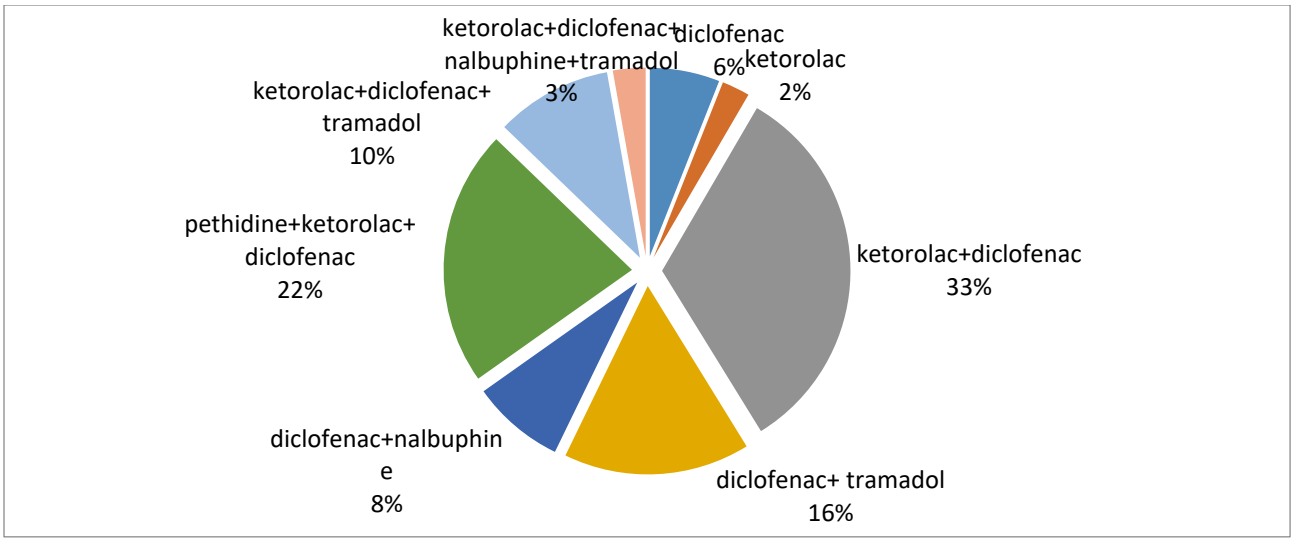

Figure 01: Use of analgesics in single & combination form

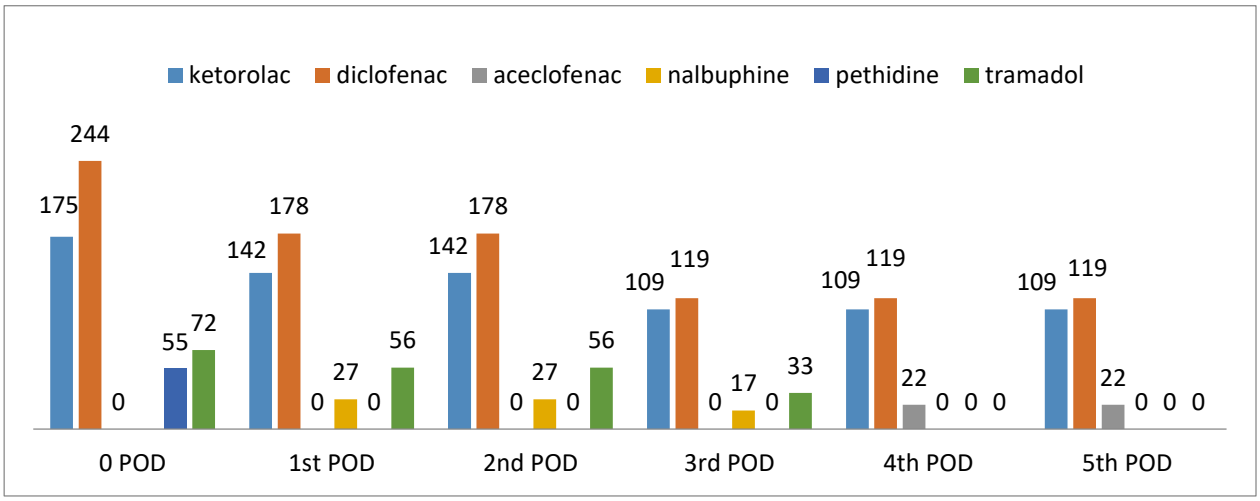

Figure 02: Analgesic frequency in post-operative days

Table 02: Prescription pattern of analgesics

Sl. No	Indicators assessed	Data value
01	Average number of analgesics per prescription 0 POD 1st POD 2nd POD 3rd POD 4th POD 5th POD	2.1 1.6 1.6 1.1 1 1
02	Percentage of drugs prescribed by generic name	22%
03	Percentage of drugs(analgesics)	22%

	from Essential Drug List of Bangladesh	
04	Most common analgesic prescribed	Diclofenac
05	Most common combination analgesic prescribed	Ketorolac + Diclofenac
06	Most common route of administration	Intravenous
07	Percentage of injections prescribed 0 POD 1st POD 2nd POD 3rd POD 4th POD 5th POD	 91.6% 91.6% 91.6% Nil Nil

DISCUSSION:

Pain is very personal and multi-factorial which evokes unpleasant sensations and emotions.[1] Uncontrolled post-operative pain consequently will be exposed to the multiple complications [12] such as increased morbidity and mortality, prolonged hospital stay, a delay in healing and recovery, patient dissatisfaction, anxiety, and diminished of an early return to the activities of daily life.[1] The main objective of the study was to evaluate the utilizing pattern of opioids and non-opioids in surgically treated patients on 0 to 5th postoperative day. In our study, age ranging from 18-37 years (72%) were more common group undergo surgical intervention for different indications which was consistent with other studies where majority of patients were in the age group of less than 40 years.[10,14] Largest proportion of patients was female 165 (66%) which was in accordance with the study done by Toro MM et al. in which 161 (64.4%) of patients were female.[10] However this finding differs with another study where majority of patients were male.[15] This may be because of gynaecological patients were also included in our study. The surgical interventions performed in different allied department were diverse as already depicted above. Strong opioids are recommended only as rescue analgesia for high-intensity pain in addition to non-opioid analgesia. Among narcotic analgesics tramadol 72(28.8%) followed by pethidine 55(22%) was commonly used in the day of operation which was in accordance with other study where tramadol was highly prescribed opioid.[16] Tramadol is widely available in different formulations and cheaper than pethidine as well as the better adherence to the patients due to its minimal side effects such as cardio respiratory depression with minimal addiction liability, sedation, vertigo, dizziness and gastrointestinal side effects as compared to pethidine.[4,7] Pethidine is used limited in gynaecology and fewer used in other surgical cases. But few years back pethidine was frequently used in the operation day. The cause of only use of pethidine was that the drug was supplied by the government.

Among non-narcotic analgesics, diclofenac 244(97.6%) was most commonly used followed by ketorolac 175 (70%) from the day of operation to 5th POD which was consistent with the findings of other studies [15,17]wherease, ketorolac was highest prescribed drug in another study.[10] However, the use of diclofenac for the

management of postoperative pain is controversial.[15] Ketorolac reduces narcotic consumption by 25% to 45%.[9]All these analgesics were used in combination form in 229 patients (91.6%). We also found, 6 types of combination of analgesics were prescribed in post- operative days which perhaps the consequence of absence of Standard Treatment Guideline (STG). Our study shows that the most frequent combination was ketorolac & diclofenac 33%. Some other studies revealed different combination.[7,17] It suggests that the combination may be beneficial in terms of reducing side effects as individual drug doses go down in combination use.[7] As far as the trend of generic prescribing goes, it was observed only with the opioid analgesic pethidine (22%) of all analgesics prescribed and it is the only drug prescribed from essential drug list of Bangladesh. This indicates that more than half of the drugs were prescribed by brand names which add to the increased cost of therapy. Increasing generic prescribing would rationalize the use and reduce the cost of drugs.[15] The route of administration was commonly intravenous (91.6%) from 0 POD to 3rd POD followed by oral and or suppository. Oral administration and suppository form of drug usually prescribed on 4th & 5th POD. Ketorolac and aceclofenac were non opioids used through the oral route. Sen S. *et al* have shown that Paracetamol and ibuprofen were used through the oral route which was different from our study.[7] Average number of analgesics per prescription 2.1 to 1 from 0 POD to 5th POD. Excessive amount of analgesics may causes potential adverse effects and also consumes more budgets. In Bangladesh, drug utilization study in regular basis is required to achieve this goal. The pain assessment scores should be implemented in further utilization study. Moreover, this study involved in Surgery and allied departments, gynaecological dept. instead of which it could have been focused on a particular department in further study.

CONCLUSION:

Multimodal analgesia was frequently prescribed where non-opioid analgesic plays a major role in postoperative pain relief and provides fewer chances of side effects than opioid drugs. As the appropriate choice of analgesics depends on its efficacy and side effects profile, pain intensity of the patients should be assessed by using pain intensity scale before selection of analgesics for better, safe and cost effective treatment modalities.

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