

A STUDY OF DRUG UTILIZATION PATTERN OF ANALGESICS IN POST-OPERATIVE PATIENTS IN A TERTIARY CARE HOSPITAL

DARADI DAS, PINAKI CHAKRAVARTY[✉], DHRUBAJYOTI BORAH*, ALI N YASHIN

Department of Pharmacology, Tezpur Medical College and Hospital, Tezpur, Assam, India.

*Corresponding author: Dr. Dhrubajyoti Borah; Email: dr.dhrubajyotiborah@gmail.com

Received: 06 July 2023, Revised and Accepted: 28 August 2023

ABSTRACT

Objectives: The objective of the study was to evaluate the utilization pattern of analgesic use in post-operative wards of different surgical specialties.

Methods: The study was observational and retrospective conducted, for 4 months from November 2022 to February 2023 in Tezpur Medical College, Assam and data were collected from 80 patients' case sheets regarding analgesics prescribed during post-operative days, their route of administration, mono/combined therapy.

Results: Non-steroidal anti-inflammatory medications (NSAIDs) as diclofenac (55.5%) and paracetamol (32.5%) were commonly prescribed for relief, both in monotherapy and combination therapy. Tramadol, an opioid was also used for severe pain relief and then shifted to NSAIDs. All patients were prescribed injectable analgesics on the day of surgery and the 1st post-operative day. Combination of aceclofenac + paracetamol (7.70%) was the most prescribed oral analgesic followed by tramadol + paracetamol (3.50%), mostly prescribed as brand names.

Conclusion: Diclofenac was the most used NSAID in post-operative pain both in mono and combined therapy and the prescribing pattern was not rational related to more use of brand names.

Keywords: Drug utilization study, Post-operative pain, Analgesic, Monotherapy, Diclofenac.

© 2024 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2024v17i2.48775>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>

INTRODUCTION

According to the WHO, drug utilization study includes marketing, distribution, prescribing, and using pharmaceuticals in society with a focus on the ensuing medical, social, and financial repercussions [1]. A prescription for a medication that has been properly studied is given at the right dose, with the right information, and at a reasonable cost [2].

Pain is a disagreeable feeling that can vary in intensity and is always personal. Acute painful conditions are treated right away, but severe post-operative pain and severe visceral discomfort are not properly identified and treated [3].

Post-operative discomfort can have an impact on the patient's recovery and general health, and it can progress to chronic pain, slow wound healing, and insomnia. It can also cause problems including deep vein thrombosis and atelectasis. According to reports, 20-80% of post-operative patients have pain, and roughly one-third of individuals undergoing surgical procedures experience acute pain. Undertreated severe pain may have physiological effects that heighten the stress response to surgery and are seen as a series of endocrine, metabolic, and inflammatory processes that may eventually lead to organ failure, morbidity, longer hospital stays, and mortality [4].

As a result, the proper use of analgesics can significantly improve social and economic conditions while also reducing patient suffering. Opioids, non-steroidal anti-inflammatory medications (NSAIDs), non-opioid central neuronal analgesia, local anesthesia, and other analgesics are frequently recommended in patient care settings [3].

Therefore, multimodal pain management includes the application of diverse pharmacological methods of additive or synergistic effects, which act by acting at distinct places within the central and peripheral nervous system. As a result, using procedure-specific, multimodal pain

treatment after surgery has almost become required to improve post-operative recovery [4].

Since pain is a subjective experience, it should be treated in accordance with the patient's reaction and using the optimum analgesic. By choosing the proper dose, route, manner of administration, etc., the chosen analgesic should be safer for that patient and unwanted effects should be minimized [3]. There are a wide variety of analgesics on the market, which could cause the issue of illogical prescriptions [2]. Non-opioid medication is favored for the management of chronic pain, according to a recent Centers of Disease Control and Prevention CDC analysis. NSAIDs by themselves are insufficient to treat post-operative pain in cases of severe pain following surgery. NSAIDs reduce opioid-related adverse effects such as drowsiness, nausea, and vomiting when taken with opioids [5].

To achieve reasonable and cost-effective medical treatment, the analysis of medication consumption patterns is a crucial component of the medical audit. It aids in monitoring, analyzing, and developing the necessary changes in prescribing practices [6].

Therefore, the present study aims to evaluate the utilization pattern of analgesic use in post-operative wards of different surgical specialties.

The objective of this study being evaluating the utilization pattern of analgesic use in post-operative wards of different surgical specialties.

METHODS

The study was observational and retrospective type, conducted at Tezpur Medical College and Hospital, Assam. The study was conducted for a period of 4 months from November 2022 to February 2023 and data were collected from case sheets with the history of patients who underwent surgeries in department such as surgery, obstetrics and

Table 1: Pattern of analgesics usage on day 0 of surgery

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Paracetamol	-	26	26	32.5
Diclofenac	-	44	44	55.5
Tramadol	-	10	10	12.0
Aceclofenac	-	-	-	-
Aceclofenac + paracetamol	-	-	-	-
Tramadol + paracetamol	-	-	-	-
Diclofenac + paracetamol	-	-	-	-
Total	-	80	80	100

Table 2: Pattern of analgesics usage on day 1 of surgery

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Paracetamol	-	23	23	28.75
Diclofenac	-	48	48	60.0
Tramadol	-	9	9	11.25
Aceclofenac	-	-	-	-
Aceclofenac + paracetamol	-	-	-	-
Tremadol + paracetamol	-	-	-	-
Diclofenac + paracetamol	-	-	-	-
Total	-	80	80	100

gynecology, ortho department. Ethical clearance was obtained from the Institutional Ethical Committee.

A total of 80 patients' case sheets were selected from the record section with ages between 18 and 60 years randomly and patients with severe illness and hemodynamically compromised patients were excluded from the study.

The data regarding analgesics prescribed during the day 0th, 1st, 2nd, and 3rd post-operative days, their route of administration, and mono or combined therapy were collected from case sheets.

Statistical analysis

Data were analyzed using descriptive statistics and the results were presented using a frequency distribution table with Microsoft Excel.

RESULTS

80 patients were selected from the post-operative wards of orthopedics (36.25%), general surgery (18.75%), and obstetrics and gynecology (45%) department.

All the patients were prescribed injectable analgesics (parenteral) on the day of surgery (day 0) and the 1st post-operative day (day 1) (Tables 1 and 2). Diclofenac (55.5%) was the most commonly prescribed among the parental analgesics, followed by paracetamol (32.5%) and tramadol (12%) (Table 2).

A total of 80 patients were prescribed different oral analgesics on post-operative day 2. Paracetamol individually is the common orally given analgesic. Combination of aceclofenac + paracetamol (7.70%) was the most prescribed oral analgesic followed by tramadol + paracetamol (3.50%). Least prescribed oral analgesic was diclofenac + paracetamol (1.40%) (Table 3).

On 3rd post-operative day, the number of patients prescribed with different oral analgesics increased to 110. Paracetamol individually

Table 3: Pattern of analgesic usage on day 2 of surgery

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Paracetamol	42	40	82	57.7
Diclofenac	-	13	13	9.15
Tramadol	-	7	7	4.92
Aceclofenac	20	-	20	14.08
Aceclofenac + paracetamol	11	-	11	7.70
Tramadol + paracetamol	5	-	5	3.50
Diclofenac + paracetamol	2	-	2	1.40
Total	80	60	140	100

Table 4: Pattern of analgesics on day 3 of surgery

Drugs	Routes of drug administration		Total	Percentage
	Oral	Parenteral		
Paracetamol	53	4	57	43.50
Diclofenac	10	9	19	14.50
Tramadol	-	8	8	6.10
Aceclofenac	22	-	22	16.79
Aceclofenac + paracetamol	12	-	12	9.16
Tramadol + paracetamol	4	-	4	3.05
Diclofenac + paracetamol	9	-	9	6.80
Total	110	21	131	100

orally is yet again the most common followed by a combination of aceclofenac + paracetamol (9.16%) which again is the commonly prescribed oral analgesic (Table 4).

Table 1 depicts how oral administration of drugs was nil on post-operative day 0 and day 1 and oral administration increased on day 2 and day 3 while comparatively parenteral drug administration was least on post-operative day 3.

On day 0 and day 1 of surgery, monotherapy was prescribed for 80 (100%) (Fig. 2). On 2nd and 3rd post-operative days, monotherapy usage was increased up to 12.85% and 19.10%.

When considering the mode of prescribing analgesics, generic name (43%) is low compared to brand names (57%) (Table 3).

DISCUSSION

In the current study, traditional NSAIDs such as diclofenac and paracetamol were used more frequently. The study by Dasta *et al.* found that morphine was the most frequently used analgesic in post-operative pain management [6]; however, the results of Dashputra and Badwaik were consistent with the use of paracetamol as the most prevalent analgesic [7].

In our analysis, diclofenac and paracetamol were the two non-opioid analgesics that were administered the most frequently. Both monotherapy and combined treatment using diclofenac were prescribed [8].

According to our study, the most frequently used non-opioid analgesic was paracetamol by both enteral and parenteral routes followed by diclofenac. Diclofenac was prescribed both as monotherapy and in combination therapy [8].

Table 5: Monotherapy or combined therapy

Analgesics	Day 0		Day 1		Day 2		Day 3	
	No. of patient	%	No. of patient	%	No. of patient	%	No. of patient	%
Monotherapy	80	100	80	100	122	87.14	106	80.9
Combined therapy	0	0	0	0	18	12.85	25	19.1
Total	80	100	80	100	140	100	131	100

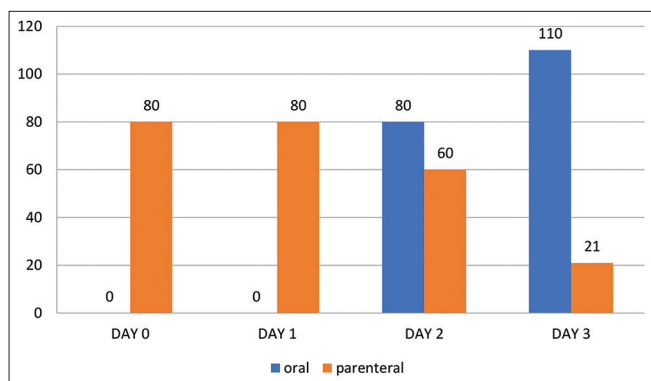


Fig. 1: Pattern of analgesics used regarding route of administration

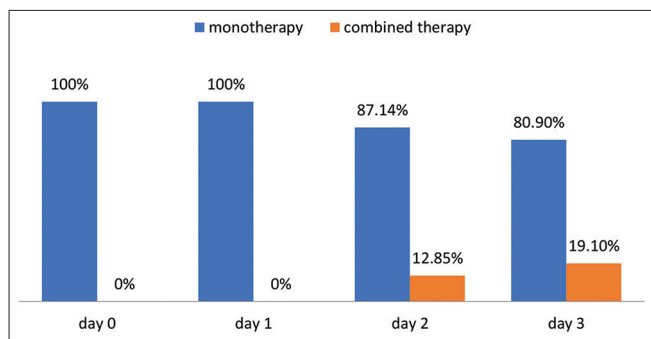


Fig. 2: Monotherapy versus combined therapy (%)

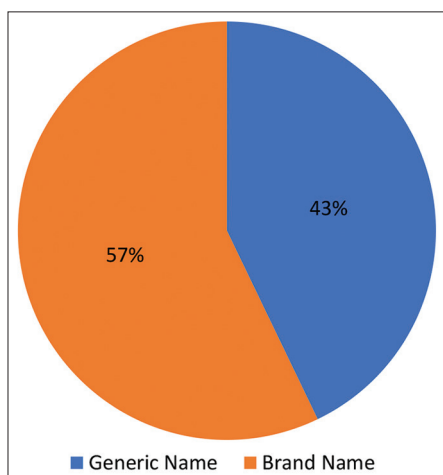


Fig. 3: Prescriptions with generic/brand name

According to several studies, the adverse effects profile of non-opioid drugs is less than that of opioid drugs [8]. The requirement for an opioid analgesic in the early post-operative period can be reduced using the non-opioid drugs [7]. Findings in this study are comparable with Dashputra and Badwaik, Chaudhari *et al.*, and Vallano *et al.*, suggesting

that non-opioid analgesics are the preferred drugs for the treatment of post-operative pain relief [7-11].

Opioids such as tramadol were used as monotherapy after surgery for good pain control. However, its use has reduced from 1st post-operative day to 3rd post-operative day, whereas paracetamol and diclofenac use remained almost the same throughout the observed period.

Moreover, NLEM India promotes prescription by generic names [12]. In our study, a total of 57% of prescriptions were prescribed by brand name and 43% of prescriptions drugs were given by generic name which was like the findings observed by Tabish *et al.* (84.08%) and Bhansali *et al.* (51.43%) [13].

CONCLUSION

The present study showed that NSAIDs as paracetamol and diclofenac were commonly prescribed for post-operative pain relief, both in monotherapy and combination therapy. Tramadol, an opioid was also used for severe pain relief and then shifted to NSAIDs. The post-operative cases can be managed with conventional NSAIDs and non-NSAIDs like tramadol to a little extent, being a relatively safe drug for short-course therapy with minimal side effects.

In this study, prescription patterns were not rational related to more use of brand names rather than generic names.

The study's findings have provided insight into the analgesic use now being done on the surgical ward, and they may help us improve that use in the future by adhering to the rules for rational prescription.

Drug use studies are thus essential for the safe prescribing of medicines. Every country should have its own national essential drug list, which can be developed by tracking drug usage trends and their associated side effects. By implementing the proper educational interventions, the rational prescription may always be improved, which may be viewed as an endeavor to raise the standard of health care.

Limitations of the study

The current study's shortcomings include the small number of patients who were involved, which prevented an accurate overview of the other departments. It is necessary to build more research projects involving numerous departments, super-specialty patients, and cancer surgical patients.

ACKNOWLEDGMENT

Authors would like to express their sincere gratitude to all respondents for their participation.

CONFLICT OF INTEREST

None declared.

FUNDING

No sources.

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

REFERENCES

1. WHO Expert Committee. Introduction to Drug Utilization Research. Geneva: World Health Organization; 2003. Available from: <https://iris.who.int/bitstream/handle/10665/42627/924156234X.pdf> [Last accessed on 2013 Jul 25].
2. Chandrakantha T, Rajesh B, Neha K. Drug utilization pattern of analgesics among post-operative patients in a tertiary care hospital: A prospective study. *Indian J Pharm Pharmacol* 2019;6:137-41.
3. Barawade S, Gursale S. A study of drug utilization pattern of analgesics in postoperative patients of tertiary care hospital. *MedPulse Int J Pharmacol* 2017;1:28-32.
4. Chaudhary A, Sarraf DP, Gupta AK, Khadka DB, Jayswal A, Dhakal A, et al. Prescribing pattern of analgesics in hospitalized patients in surgical unit at Nepalgunj medical college and teaching hospital. *J Karnali Acad Health Sci* 2022;5:2-4.
5. Parulekar VV, Badar VA. Observing drug utilization trends of analgesics in indoor surgical patients in tertiary care teaching hospital. *Asian J Pharm Clin Res* 2020;13:47-50. doi: 10.22159/ajpcr.2020.v13i5.37062
6. Dasta JF, Fuhrman TM, McCandles CR. Patterns of prescribing and administering drugs for agitation and pain in patients in a surgical intensive care unit. *Crit Care Med* 1994;22:974-80. doi: 10.1097/00003246-199406000-00016, PMID 8205830
7. Dashputra AV, Badwaik RT. Utilization of analgesics in perioperative cases of teaching hospital. *Int J Med Pharm Sci* 2013;3:14-9.
8. Ehihamenor EE, Aghahowa SE, Azodo CC. Retrospective evaluation of analgesics prescribing pattern in A Tertiary Hospital in Nigeria. *J Med Biomed Res* 2002;11:71-7.
9. Chaudhari JS, Kubavat AR, Mistry VR, Pandya AS, Hotchandani SC, Patel BS. A drug utilization study of analgesics for management of postoperative pain in patients admitted at a tertiary care teaching hospital. *Int J Basic Clin Pharmacol* 2013;2:757-62. doi: 10.5455/2319-2003.ijbcp20131216
10. Vallano A, Aguilera C, Arnau JM, Baños JE, Laporte JR. Management of postoperative pain in abdominal surgery in Spain. A multicentre drug utilization study. *Br J Clin Pharmacol* 1999;47:667-73. doi: 10.1046/j.1365-2125.1999.00962.x, PMID 10383545
11. Kumarasingam T, Revathy S, Mukherjee D. Drug utilization pattern of analgesics among postoperative patients in a tertiary care hospital. *Pharm Lett* 2014;6:40-6.
12. National List of Essential Medicines, India; 2011. Available from: <https://apps.who.int/medicinedocs/documents/s18693en/s18693en.pdf> [Last accessed on 2017 May 05].
13. Bhansali NB, Gosai TR, Dholaria NK, Suthar SD, Chacko J, Chavda DA, et al. Drug utilization study in post-operative patients in surgical ward of a tertiary hospital attached with medical college. *Pharm Lett* 2013;5:251-7.