Indian Journal of Pharmacy Practice., 2023; 16(3):227-231.
https://www.ijopp.org

Original Article

Pharmacoepidemiological Assessment of Pain Management in Hospitalized Patients-A Cross Sectional Study

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ABSTRACT

Background: Pain is recognized as a persistent global health problem, which has great impact on the quality of life of the society and can have physical, psychological and social consequences. **Objectives:** The study was planned to assess prescribing pattern of analgesics and patient satisfaction with treatment. **Materials and Methods:** It was a prospective cross-sectional study conducted at a tertiary care teaching hospital for six months. A total of 171 inpatients were included in the study and data was collected using data entry forms and pain assessment scales. **Results:** Out of 171 study population, male patients were more (55.55%) and most of the patients were in the age group of 40-65 years (47.95%). Among all prescriptions, majority of patients were prescribed with single analgesic (52.04%) and preferred dosage form was injections (55.43%). Among all prescription analgesics were more prescribed for duration of 1-5 days (60.70%). The category of analgesics more prescribed were non-opioids (86.31%) and the most common analgesic combination was found to be Aceclofenac + Paracetamol + Serratiopeptidase (45.07%) followed by Aceclofenac + Paracetamol (38.02%). Patient satisfaction with pain management was analyzed using pain scales which indicated that 72 patients (42.10%) were having moderate pain after the treatment. **Conclusion:** In the study population, comparatively more patients were satisfied with the treatment. Proper pain assessment using appropriate methods will help to optimize the analgesic use and will improve the clinical outcome and reduce the hospital stay.

Keywords: Analgesics, Assessment, Management, Pain.

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Received: x-x-x;
Revised: x-x-x;
Accepted: x-x-x.

INTRODUCTION

Pain is recognized as a persistent global health problem, which has great impact on the quality of life of the society and can have physical, psychological and social consequences. Pain can be associated with other disease conditions such as cancer and HIV, in which chronic pain is a common symptom.[1]

Pain can be also caused by treatments like surgery and radiotherapy. Pain is the most frequent reason for hospital admissions and interferes with virtually every aspect of a patient's life. Pain impacts everyday life for the sufferer and those closest to them. The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage".[2] Generally pain is classified based on the duration as acute pain and chronic pain. Acute pain has sudden onset and a limited duration which is commonly caused by tissue damage. Whereas chronic pain is associated with long-term illness and often is attributable to nerve damage. Based on the kind of damage caused, pain can also be classified as nociceptive pain and neuropathic pain. Nociceptive pain is caused by tissue damage and neuropathic pain is caused by nerve damage.[3]

According to GSK Global Pain Index 2017, globally, more than half of people claim to have experienced body pain on a weekly basis (56%) and 86% of people claim to have experienced head pain at some point in their life, with a quarter (23%) experiencing head pain on a weekly basis. A Prevalence of Chronic Pain in India was found to be 19.3% and was expected to increase significantly in two decades.[4]

Pain assessment is a crucial step as it can assist the physician to recommend the best treatment and to monitor any underlying cause. The assessment is mainly based on the intensity, location and duration of pain. Pain can be self-reported by the patients and there are also a range of other options including pain rating scales such as Visual Analogue Scale and the Wong-Baker Faces Pain Scale.[5]

Pain management can be achieved by non-pharmacological and pharmacological approaches. In non-pharmacological approaches stimulation therapy and psychological therapy

DOI: 10.5530/ijopp.16.3.37

Table 1: Duration of analgesic treatment in days from the patient records (*n*=285).

Sl. No.	Duration of analgesics (Days)	No. of Prescriptions	Percentage (%)
1	1-5	173	60.70
2	6-10	69	24.21
3	11-15	30	10.52
4	16-20	13	4.56

is the choice of treatment. Pharmacological therapy includes non-opioid analgesics and opioid analgesics.

Analgesics should be prescribed depending on the intensity of pain, which is categorized as mild, moderate and severe. WHO analgesic ladder can be used as a guideline for the administration of analgesics, on the basis of severity of pain. Instead of mono-therapy, combination therapy can also be used to provide additive effects.[6]

Although there are several methods for proper assessment and management of pain, the under- treatment and misdiagnosis are still appearing to be the major issues encountered by the patients. The lack of patient compliance and other drug related problems also needs to get attention. Failure to acknowledge pain, failure to have pain management guidelines, failure to document pain and to assess treatment adequacy and failure to meet patient's expectations are the causes for poor management of pain. Understanding the major contributing barriers in the pain management is essential for better treatment outcomes.[7-9]

Our study aims to assess the prescribing pattern of analgesics and patient satisfaction with the treatment given for pain, in various departments of a tertiary care teaching hospital in North Karnataka. In this study, an effort is made to promote interventions, to improve analgesic use for better patient care and to analyze knowledge and awareness among patients, which can be modified if necessary to facilitate better health care delivery.

MATERIALS AND METHODS

This prospective observational study was conducted for 6 months in inpatients of orthopedics, surgery and general medicine departments of a tertiary care teaching hospital in North Karnataka. The Institutional research ethical clearance for the study was obtained from the Institutional research Ethical Committee (human) before commencing the study. This observational study was carried out in 171 in patients with analgesic prescriptions. Inpatients of either sex who were treated with analgesics and age above 18 years with duration of hospital stay for at least 48 hr were included in the study whereas, pediatrics, outpatients, casualty patients, mentally impaired patients, pregnant and lactating women were excluded. Social demographic data and the treatment prescribed for each patient were collected from the inpatient records using specially designed data entry form. The assessment of pain was done using different pain scales such as Visual Analogue Scale and Wong Baker Faces Pain Rating Scale before and after the treatment. The collected data was expressed in percentage and was analyzed using descriptive statistics. Microsoft word and excel had been used to generate graphs and tables and the results were expressed in percentage.

RESULTS

A prospective observational study was performed by analyzing 171 prescriptions containing analgesics. The study population was classified on the basis of gender and age.

Out of 171 patients 95 (55.5%) were male and 76 (44.4%) were female. Among the total prescriptions collected, age was taken into consideration by dividing into 3 age groups. Maximum numbers of patients were found in the age group of 40-65 years (47.95%) followed by 19-40 years (40.35%) and least were found in >65 years (11.69%). The mean age of the participants was 46.15 (±18.32).

Majority of patients were admitted in the hospital due to pain 48 (28.07%) followed by swelling 47 (27.48%), wound 29 (16.95%), falls 12 (7.01%), fever 12 (7.01%), miscellaneous 10(5.84%), cough and cold 9 (5.26%), bleeding 3 (1.75%) and weakness 1 (0.58%) (Figure 1).

Our study shows that 89 (52.04%) patients were prescribed with single analgesic, 50 (29.23%) patients two and 42 (18.71%) participants were given three analgesics (Figure 2).

During the hospital stay 285 analgesics were prescribed. Among these 158 (55.43%) analgesics were prescribed in the form of injection, 125 (43.85%) were prescribed in the form of tablet and 2 (0.70%) were prescribed in the form of syrup (Figure 3).

Among 285 analgesics administered 173 (60.70%) were prescribed for a duration of 1-5 days followed by 69 (24.21%) for 6-10 days, 30 (10.52%) for 11-15 days and 13 (4.5%) for 16-20 days (Table 1).

As shown in Table 2 the prescribing trend of analgesics. Amongst 285 analgesics, 246 (86.31%) were prescribed in trade name and only 39 (13.68%) analgesics were prescribed in generic name.

On the basis of analgesic classification, 246 (86.31%) patients were prescribed with non-opioid analgesics and only 39 (13.68%) patients were prescribed with opioid analgesics (Figure 4).

Table 2: Prescribing trend of analgesics (*n*=285).

Sl. No.	Trend	No. of Patients	Percentage (%)
1	Generic name	39	13.68
2	Trade name	246	86.31

Table 3: Combination of analgesics prescribed (*n*= 71).

Sl. No	Combination	No. of Prescriptions	Percentage (%)
1	Aceclofenac + Paracetamol	27	38.02
2	Aceclofenac + Paracetamol + Serratiopeptidase	32	45.07
3	Aceclofenac + Paracetamol+Chlorzoxazone	5	7.04
4	Aceclofenac + Thiocolchicoside	2	2.81
5	Bromelain + Trypsin + Rutoside + Diclofenac	1	1.40
6	Naproxen + Domperidone	1	1.40
7	Tramadol + Paracetamol	2	2.81
8	Aceclofenac + Paracetamol + Tizanidine	1	1.40

Table 4: Assessment of pain before and after analgesic treatment using pain scales in the study population (*n*= 171).

Severity	Before Treatment (No. of Patients)	After Treatment (No. of Patients)
None	1 (0.58%)	32 (18.71%)
Mild	37 (21.63%)	66 (38.59%)
Moderate	104 (60.81%)	72 (42.10%)
Severe	29 (16.95%)	1 (0.58%)

Table 3 exhibit combination of analgesics in which Aceclofenac + Paracetamol + Serratiopeptidase was prescribed more 32 (45.07%), followed by Aceclofenac + Paracetamol 27 (38.02%), Aceclofenac + Paracetamol + Chlorzoxazone 5 (7.04%), Aceclofenac + Thiocolchicoside 2 (2.81%), Diclofenac + Bromelain + Trypsin + Rutoside 1 (1.40%), Naproxen+ Domperidone 1 (1.40%), Tramadol+ Paracetamol 2 (2.81%) and Aceclofenac + Paracetamol+ Tizanidine 1 (1.40%).

Table 4 shows comparison of pain before and after analgesic use. Assessment of pain by Visual Analogue Scale and Wong Baker faces scale found that most of the patients reported moderate pain [72 (42.10%)] followed by mild pain [66 (38.59%)] and severe pain was reported by 1(0.58%) patient. After the administration of analgesics 32 (18.71%) of patients reported no pain.

DISCUSSION

A prospective observational study was carried out by reviewing prescriptions of 171 inpatients in orthopedics, surgery and general medicine wards. Out of 171 patients 95 (55.55%) were male and 76 (44.44%) were female. It was found that male patients were more due to large number of male admissions in orthopedics department.

Among the total prescriptions collected, age was taken in to consideration by dividing into 3 age groups. Maximum numbers of patients were found in the age group of 40-65 years (47.95%) followed by 19-40 years (40.35%) and least were found in >65 years (11.69%). The mean age of the participants was 46.15 (±18.32). This finding is in accordance with results of the previous study conducted by Joychandra O *et al.* The middle age patients in our study population shows high prevalence of pain due to accidents, fractures and injuries.[10]

Majority of patients were admitted in the hospital due to pain 48 (28.07%) followed by swelling47 (27.48%), wound 29 (16.95%), falls 12 (7.01%), fever 12 (7.01%), miscellaneous 10 (5.84%), cough and cold9 (5.26%), bleeding 3 (1.75%) and least found reason was weakness 1 (0.58%). This finding suggests that most of the patients came with pain as the chief reason for admission because pain is a major quality issue and is highly prevalent in every patient population. This result is supported by the findings of the previous study by Morrison RS *et al.*[11]

Out of 171 patients, the most common comorbid condition was fracture [35(20.46%)] and least observed condition was hernia [3(1.75%)]. Bone fractures are a primary reason for pain and orthopedics department had large number of admissions from fracture.

It was observed that, in the whole study participants single analgesic was prescribed for 89 (52.04%) patients, two analgesics for 50 (29.23%) patients and three for 42 (18.71%) of patients. Here maximum number of patients was prescribed with single analgesic for the treatment of pain. Monotherapy used in the pain management avoids potential complication and provide associated cost benefits to the patients.

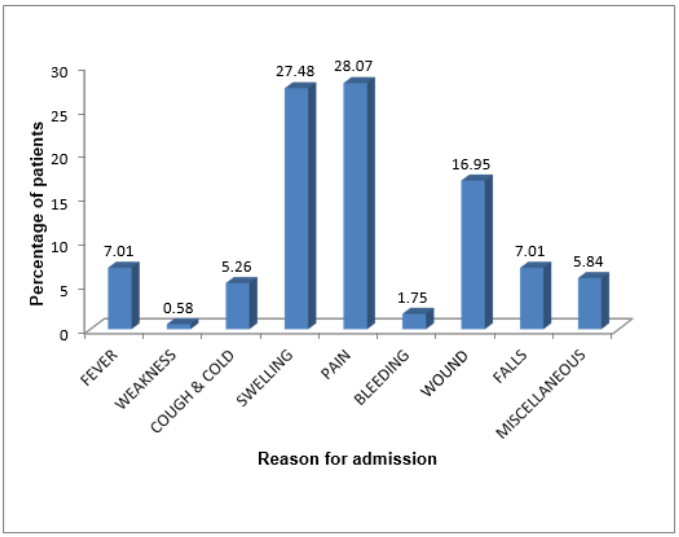

Figure 1: Reason for admission (*n*=171).

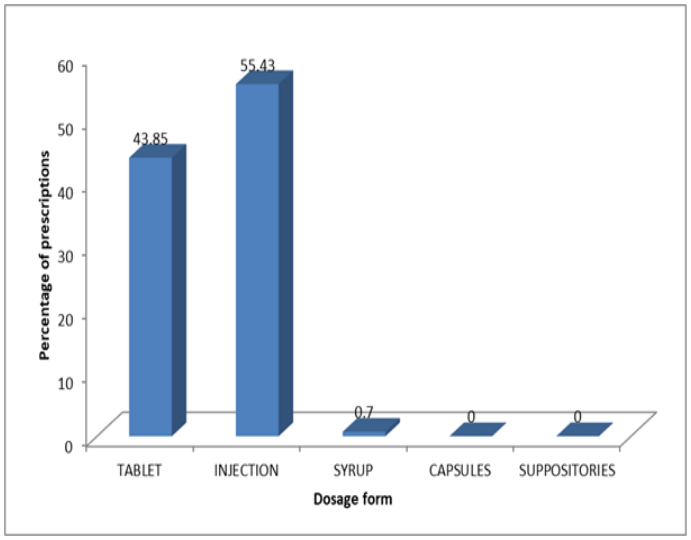

Figure 3: Dosage form of analgesics prescribed (*n*=285).

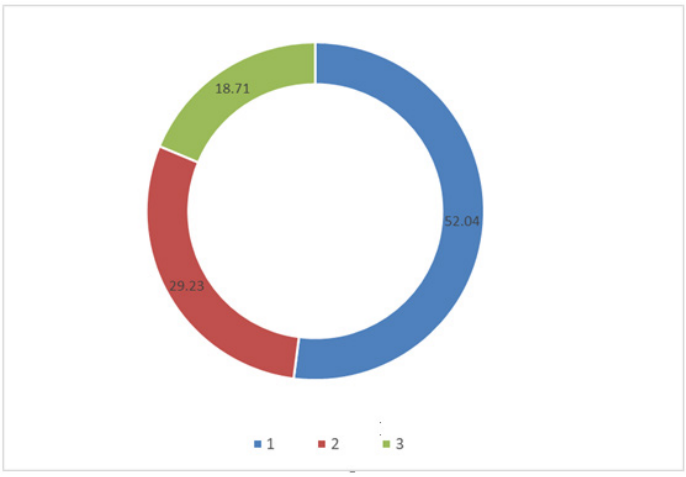

Figure 2: Number of analgesics prescribed (*n*=171).

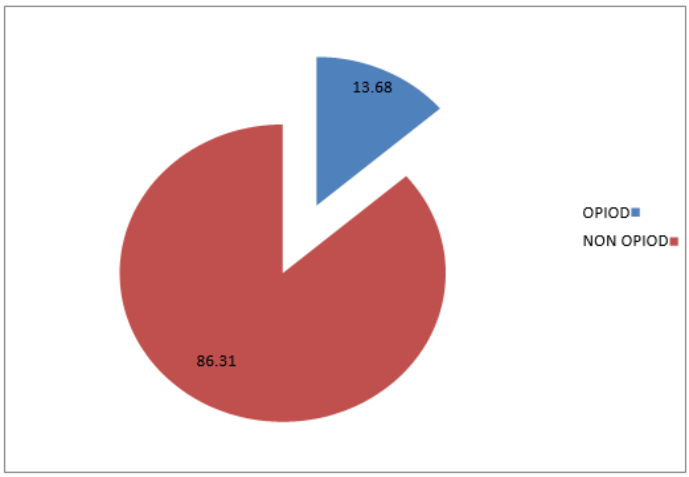

Figure 4: Breakdown of analgesics prescribed (*n*=285).

A recent study by Sen S *et al.* showed that the most common route of administration was intravenous (70.3%) for the patients prescribed with analgesics. Similarly in our study, large number of analgesics was prescribed as injection 158 (55.43%), followed by tablet 125 (43.85%) and syrup 2 (0.70%). The data suggest that injections were more used than any other dosage form.[12]

In our study, based on the duration, the drugs were classified into 4 groups, drugs administered for a period of 1-5 days, 6-10 days, 11-15 days and 15-20 days. Among 285 analgesics 173 (60.70%) analgesics were prescribed for duration of 1-5 days. This indicates that majority of the analgesics were prescribed for a short duration of time. It was noticed that, on the day of admission most of the patients were administered with analgesics in the form of IV infusion which was later converted to the oral forms, mostly within duration of 5 days.

As prescribing by generic name will help for rational use of drugs with regard to cost, safety and efficacy by permitting the identification of the products by its scientific names, we analysed this parameter as per WHO drug use criteria and found that, compared to the generic name of 39 (13.68%) analgesics, brand name was used for 246 (86.31%) analgesics in our study which was similar to the findings observed by Kumarasingam T *et al.* (61%). This shows the greater tendency to prescribe drugs by brand name and influence of pharmaceutical companies over prescribers. Prescription by trade name increases the cost of therapy as compared to generic drug prescribing.[13]

Analgesics are mainly classified as opioids and non-opioids. Of the total prescriptions only 39 (13.68%) analgesics prescribed were opioids and the remaining 246 (86.31%) were non-opioids. The opioids were prescribed less frequently than non-opioids because opioids are preferred for treating severe pain and also to avoid the misuse of opioids. Compared to opioids, non-opioids are also less costly and produce lesser side effects.

In our study, the most prescribed combination of analgesic was Aceclofenac + Paracetamol + Serratiopeptidase [32 (45.07%)] and least prescribed combination was Aceclofenac + Paracetamol+ Tizanidine [1 (1.40%)]. Similarly, study conducted by Angel KY *et al*. shows that non-opioid analgesic was the most commonly prescribed analgesic combination in hospital. This data suggests that patients were mostly prescribed with Aceclofenac + Paracetamol + Serratiopeptidase (triple combination therapy) than dual and other triple combination therapy due to fewer side effects and lesser cost.[14]

In present study, the drug related problems were evaluated and drug interactions were observed the most (80.67%). The severity of drug interactions was categorized into major, moderate and minor interactions. It was observed that 44.16% of interactions had moderate severity and about 33.97% came under minor interactions, 2.54% of interactions had major severity. The drug interactions can be minimized by screening the prescription with various drug databases before dispensing the drugs.

Pain assessment was done for all study participants using Visual Analogue Scale and Wong Baker faces scale. The results showed that 32 (18.71%) patients reported no pain after the administration of analgesics and most of the patients reported moderate pain 72 (42.10%) followed by mild pain 66 (38.59%) and severe pain was reported by only 1 (0.58%) patient. Satisfaction with pain management was assessed from the intensity of pain after the analgesic use. Higher pain intensity after treatment indicated low satisfaction and low pain intensity after treatment indicated high satisfaction.

CONCLUSION

In our study, an attempt to assess the prescribing pattern of analgesics in a tertiary care teaching hospital was made. It was analysed that most of the analgesics were prescribed by trade name than generic name and treatment duration was different from the standard treatment guidelines. Comparatively a greater number of patients were satisfied with the treatment. From the pain assessment using various scales, it was observed that the analgesics were administered as per the WHO analgesic ladder for majority of the patients. Proper pain assessment using appropriate methods will help to optimize the analgesic use and will improve the clinical outcome and reduce the hospital stay.

ACKNOWLEDGEMENT

We express our sincere thanks to Medical Superintendent and HODs of various departments of Navodaya Medical College Hospital and Research Centre, Raichur for their valuable suggestions and necessary guidance to carry out this research work.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

WHO: World Health Organization; **GSK:** Glaxo Smith Kline.

SUMMARY

A Prospective cross sectional study conducted at a tertiary care teaching hospital for period of 6 months among 171 patients inorder to determine prescribing pattern of analgesics and patients satisfaction with the treatment. In this study maximum number of patients was prescribed with single analgesic for the treatment of pain. Monotherapy used in the pain management avoids potential complication and provide associated cost benefits to the patients. Comparitively majority of the study population were satisfied with the treatment. Proper pain assessment with appropriate methods can optimize the analgesics use and reduce the hospital stay.

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Cite this article: Binu KM, Thomas A, Prasad B, Soorya JBP, Danam MS, Hiremath D. Pharmacoepidemiological Assessment of Pain Management in Hospitalized Patients-A Cross Sectional Study. Indian J Pharmacy Practice. 2023;16(3):227-31.