International Journal of Pharmaceutical Science and Research
www.pharmacyjournal.net
ISSN: 2455-4685
Received: 11-05-2021, Accepted: 26-05-2021, Published: 10-06-2021
Volume 6, Issue 2, 2021, Page No. 13-17

A study of prescribing pattern of analgesics in a tertiary care hospital

Bindesh Dadi[1], D Rama Brahma Reddy[2], GY Srawan Kumar[2], K Durga Prasad[2]

[1] Surgeon, Costal Care hospital, Guntur, Andhra Pradesh, India

[2] Nalanda Institute of Pharmaceutical Sciences, Kantepudi, Sattenapalli, Guntur, Andhra Pradesh, India

Abstract

Background: Drug utilization pattern of Analgesics in pain management plays an important role in medical practice, and physicians frequently prescribe analgesics to improve clinical outcomes and patient's quality of life. Chronic pain is a common public health problem that has a detrimental impact on patient health, quality of life, and function, and poses a substantial socioeconomic burden.

Objective: The study was carried in private hospitals to assess the drug utilization pattern of analgesics. The main objective is to control the irrational use of analgesics.

Materials & Methods: The current study was a prospective observational study of analgesic activity in the department of general medicine, conducted in tertiary care hospital (coastal care hospital) located in Guntur, Andhra Pradesh. The data collection study was conducted between October 2020 to March 2021. In this study enrolled 1000 patients who were prescribed with analgesics from both outpatient and inpatient department. The data includes patient demographic details, analgesics, diagnosis, dosing, frequency and other parameters in the hospitals. The inclusion standards had been age of >18 years, of both gender, affected person present process foremost surgeries, affected person receiving in-affected person care with inside the departments of surgery, gynecology, orthopedics, and ENT, patients having comorbidities along with diabetes, hypertension, and obesity. The exclusion standards had been minor surgical instances, being pregnant and lactation, medicolegal, affected person receiving in-affected person care in cardiothoracic, ophthalmic, neurosurgical, pediatric surgical, obstetrics departments, postoperative deaths earlier than discharge, affected person who discharged in opposition to clinical advice, affected person noted different hospitals, incomplete statistics had been excluded.

Results: The total number of 1000 patients were assessed in our case study, in this male (502) proximity is more compare with female (498), as well as opioids usage also more in males (98) compare with females (83).Take consideration of age group between 40-49 (243) age group people take more analgesics then other.

Conclusion: Clinical pharmacist and clinician should develop several safe and effective pain regimens based on estimation of anticipated pain intensity better management of chronic pain among patients could lead to improvements in health status, functioning and improves the quality of life.

Keywords: drug utilization, analgesics, opioids, non-opioids, chronic pain

Introduction

Pain is described as perceiving nociception, whether arising from the nociceptors (nociceptive pain), the nerve itself (neuropathic pain), or both of the two (mixed pain). Pain is further defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage [1]. Analgesics are the drugs mainly used in the management of pain. Analgesics are mainly divided into two types' opioids and non-opioids, also called as narcotic (e.g. Tramadol, codeine, morphine, oxycodone, meperidine, and fentanyl) and non-narcotics (e.g. Paracetamol, metamizole, non-steroidal anti-inflammatory drugs). Normal believe is opioids acted only within the brain and spinal cord, but the action of non-opioids was exactly to the needed location (i.e. injury site & peripherally). But both known to at centrally and peripherally [2, 3]. Drugs like antidepressants and antiepileptic's, anti-reflux, anti-inflammatory, can also be used to manage the symptoms of some pain conditions [4]. The overall analgesics are commonly called as painkillers because the substance which relive pain by various ways in our body [5]. In order to emphasize the main safety concerns in relation to analgesic therapy, the present research comprises a synthesis of the literature regarding the most used analgesics and presents the risks that health professionals should be aware when dispensing or prescribing this class of drugs.

Materials and Methods

Study Setting

This quantitative, qualitative, descriptive, study was conducted in different wards of costal care hospital. The hospital located in Guntur and provides health care services of primary health care level to tertiary health care. Medical services are usually provided to each and every patients coming from all towns of Guntur as well as other parts of provinces.

Study design

The design of study was conducted to evaluate the utilization of prescribed analgesic drugs to admit. Patients during the study period of October (2020) to March (2021). All the hospitalized patients of both inpatient and outpatients prescription data in various demographic parameters such as age, gender, category, department were recorded. Medical record file of the patients were observed for the patient's diagnosis, co-morbidities, current and previous medications

after admission specifically the analgesic medications. The enrolled patients were inspect for the drugs prescribed for the pain management. These analgesic drugs include acetaminophen, non-opioids and non- steroidal anti-inflammatory drugs (NSAID'S). The pattern of prescribing analgesic drugs was observed for every ward. The analgesic drugs prescribed were also checked for the separation of opioid and non-opioid.

Results and Discussion

Total numbers of 1000 patient admissions were assessed during our study period in a private hospital in Guntur. Different classes of analgesics were administered to the patients based on the diagnosis, dosage, Frequency and Routes of administrations. The assessment in drug utilization can help minimize the irrational prescription and maximize the therapeutic effects. Our study provides an insight to the drug utilization and evaluation of analgesics prescribed in a private hospital. Among the total number of 1000 prescriptions in our study, the gender categorization were analyzed which included 502 numbers of males and 498 number of females. Male prominence was seen more (50.2 %) when compared with female (49.8 %). Similar result found in other studies like in A. Ishaqui *et al.* [5] The number of patients based on the Gender categorization is depicted in Table 1. The percentage of gender categorization is visualized in Figure 1.

Table 1: Gender categorization of all prescriptions

S.no	Gender categorization	Frequency (n=1000)	Percentage (%)
1	Male	502	50.2
2	Female	498	49.8

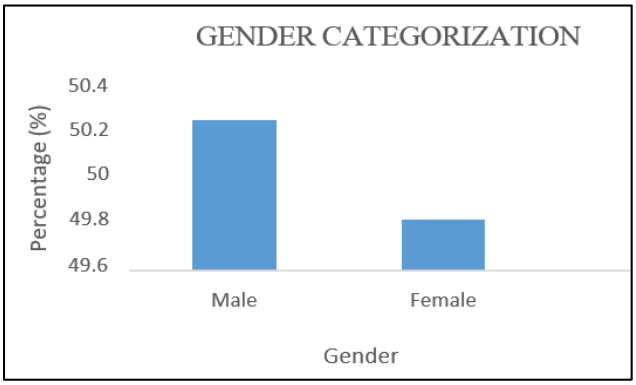

Fig 1: Gender wise distribution of all prescriptions

In the collected prescriptions age wise distribution was taken into consideration. Analgesics are mostly prescribed in the age group between 40-49 years (24.32%) and less in the age between 80-89 years (1.00%) The number of patients based on the age categorization is depicted in Table 2. The percentage of age categorization is visualized in Figure 2.

Table 2: Age wise distribution of all prescriptions

S.no	Age in years	Frequency(n=1000)	Percentage (%)
1	19	23	2.3
2	20-29	145	14.51
3	30-39	219	21.92
4	40-49	243	24.32
5	50-59	184	18.41
6	60-69	124	12.41
7	70-79	52	5.2
8	80-89	10	1

Fig 2: Age wise distribution of all prescriptions

In this overall observational study we considered the age group between 19 years to 89 years old people those are adults in this we didn't take any neonates and children who were age group between 0-18 years old. Because they are very sensitive and prominent to the adverse drug reactions caused by the analgesics so very less prescribed in this age group. Findings in this study are comparable with Thomas Wittlinger *et al.* [6]

In the collected prescriptions Department wise distribution was taken into consideration. Analgesics are mostly prescribed in the Ortho department (60.3%) compared to other departments and less in the nephrology department (2.40%). The number of patients based on the department categorization is depicted in Table 3. The percentage of department categorization is visualized in Figure 3.

Table 3: Department wise distribution of all prescriptions

S.no	Department wise	Frequency (n=1000)	Percentage (%)
1	Orthopedic	603	60.3
2	Neurology	247	24.7
3	General Medicine	126	12.6
4	Nephrology	24	2.4

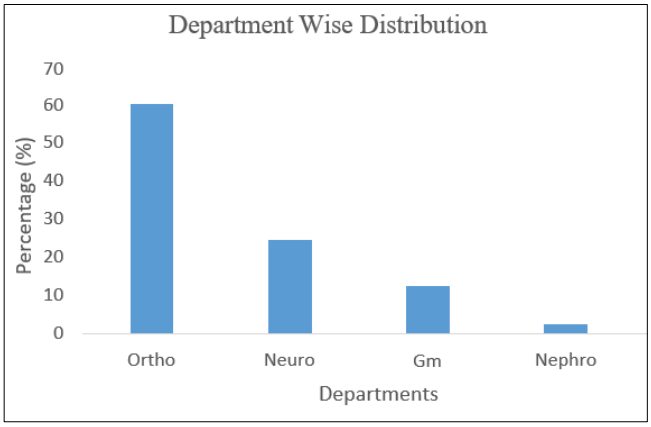

Fig 3: Department wise distribution of all prescriptions

The analgesics are the drugs mainly used for the pain reliving. Compare to all departments, the analgesics are mostly prescribed in the ortho department due to more pains occurred due to bone disorders like osteoarthritis, trauma, fractures, sprains etc. Findings in this study are comparable with T. Kumarasingam *et al* [7]. The variation in the preference of analgesics either as mono or in combination among different departments could not be well explained.

In the collected prescriptions Category wise distribution was taken into consideration. Mostly prescribed analgesics are NSAIDS (37.08%) compared to other analgesics and less prescribed analgesics are anti-reflux (0.17%). The number of patients based on the category wise distribution is depicted in Table 4. The percentage of category wise distribution is visualized in Figure 4.

Table 4: Category wise distribution of all prescriptions

S.no	Category wise	Frequency(n=1749)	Percentage (%)
1	NSAIDS	653	37.33
2	Opioids	181	10.34
3	Non-opioids	29	1.65
4	Combinations	237	13.55
5	Aniline analgesics	148	8.46
6	COX 2 inhibitors	10	0.57
7	Anti-spasmodic	10	0.57
8	Neuropathic	156	8.91
9	Anti-depressant	31	1.77
10	Anti-inflammatory	33	1.88
11	Anti-reflux	3	0.17
12	Anticonvulsants	108	6.17
13	Anti-migraine	14	0.8
14	Steroids	107	6.11
15	Muscle-relaxants	29	1.65

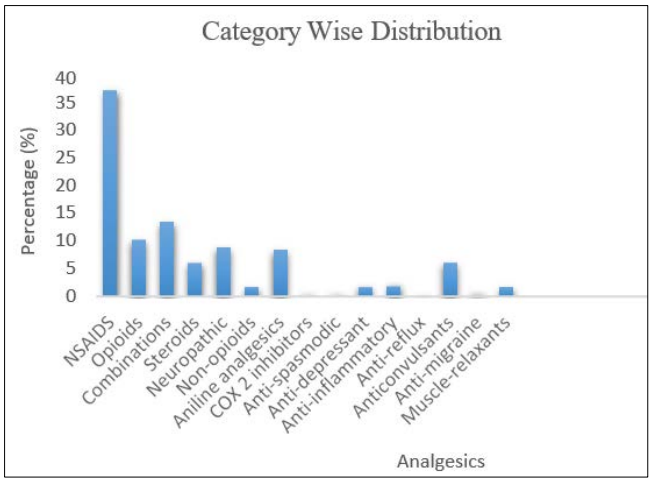

Fig 4: Usage of different categories of drugs

In our study period total 1000 prescriptions, Cyclooxygenase-1(COX-1) inhibitors mainly those are (acetylsalicylic acid and no steroidal anti-inflammatory drugs) Inhibition of COX-1 drugs by NSAIDs is responsible for NSAID-induced treatments, and prolonged bleeding time and impair platelet function. Selective COX-2 inhibitors were developed to avoid the gastrointestinal (GI) and bleeding-associated adverse effects caused by COX-1 inhibition. However, COX-1 drugs increase the risk of thrombosis and have been reported to have serious cardiovascular adverse effects, such as ischemic heart disease, heart failure, hypertension, and stroke. Therefore, COX-2 inhibitors should be used carefully, and physicians are advised to avoid these drugs in patients at high risk of cardiovascular disease. NSAIDS was found to be the most commonly prescribed analgesic drug and being a selective COX-3 inhibitor, Paracetamol is said to have more antipyretic effect than analgesic effect. Non-opioid drugs have been shown to produce lesser adverse effects than opioid drugs. Usage of Non-opioids can decrease the requirement of opioid analgesic in the early post- operative period also that non-opioid analgesics are the preferred drugs for the treatment of postoperative pain relief. The variation in the preference of analgesics either as single or in combination among different departments could not be well explained. Findings in this study are comparable with Angel *et al.* [8]

In the collected prescription the number of Analgesics prescribed is 1749. In that data opioids181, and Non-opioids1568 was prescribed. Compared to opioids (10.34%), non-opioids (89.65%) were more prescribed. The number of patients based on the analgesics wise distribution is depicted in Table 5. The percentage of analgesic categorization is visualized in Figure 5.

Table 5: Total number of analgesics in all prescriptions

S.no	Analgesics	Frequency(n=1749)	Percentage (%)
1	Opioids	181	10.34
2	Non-opioids	1568	89.65

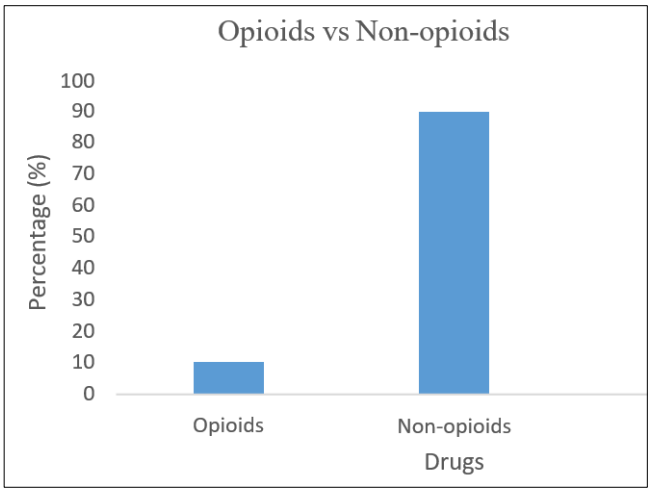

Fig 5: Analgesics wise percentage of all prescriptions

In overall study the non-opioids usage is more compare to the opioids because these are less prominent to the adverse drug reactions, the most common non-opioid analgesics are acetaminophen and NSAIDS. The non-opioid analgesics are over the counter (OTC) medication used to relive pain. Opioids are very less amount used compared to the non-opioids because the opioids are very spontanious action and as well as severe adverse actions so less amount used but post oparative procedures mostly preferable opioids due to fast onset of action. Similar results found in other studies like Santosh gursale *et al.* [9]

In the collected prescription the number of opioids prescribed is 181. In that data male (54.14%), patients received more opioids compare to female patients (44.85%) The number of patients based on the opioids wise distribution is depicted in Table 6. The percentage of opioids categorization is visualized in Figure 6.

Table 6: Percentage of opioids in all prescriptions

S. no	Gender	Frequency (n=181)	Percentage (%)
1	Male	98	54.14
2	Female	83	44.85

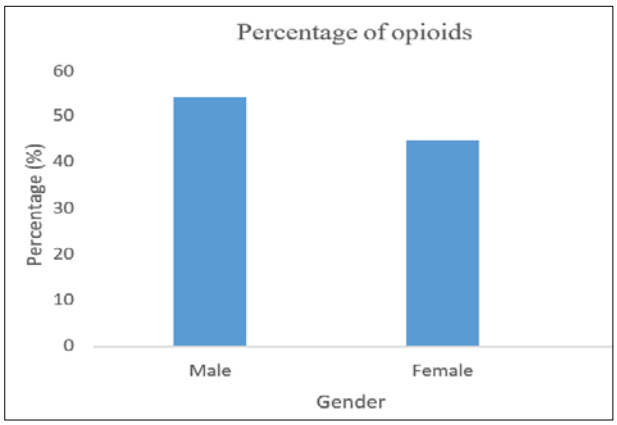

Fig 6: Opioids wise distribution of all prescriptions

Due to more male patients admitted in the hospital and compare to female patients more male patients were attending to operative procedures, after post-operative, opioids usage is enhanced, tramadol was followed by opioid analgesic, the reason for the wide number of prescriptions with tramadol may be due to the low incidence of the adverse drug reactions and an excellent drug absorption to the body tissues and a wide coverage for acute pain after surgical procedure.

Opioid analgesics like tramadol were prescribed as monotherapy on the day of surgery and post-operative with good pain control by all the studied departments. But its use has reduced from 1st Postoperative day to 3rd Post-operative day, probably to prevent adverse drug reactions and addiction because the opioids shows more adverse effects compare with non- opioids. The post-operative pain will be mostly due to inflammation with less involvement of affective component compared to the day of surgery when anxiety also might be more enhancing pain sensation. Whereas tramadol use remained almost the same throughout the observed prescriptions for control acute pain.

In the collected prescription the number of Non-opioids prescribed is 1568. In that data male patients (47.32%) received more Non-opioids compare to female patients (52.67%) The number of patients based on the non-opioids wise distribution is depicted in Table 7. The percentage of non-opioids categorization is visualized in Figure 7.

Table 7: Percentage of non- opioids in all prescriptions

S.no	Gender	Frequency(n=1568)	Percentage (%)
1	Male	742	47.32
2	Female	826	52.67

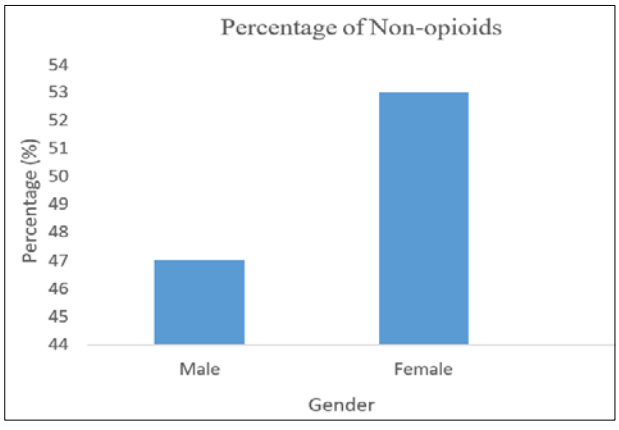

Fig 7: Non opioids wise distribution of all prescriptions

In overall study the non-opioids usage is more compare to the opioids because these are less prominent to the adverse drug reactions, the most common non-opioid analgesics are acetaminophen and NSAIDS. The non-opioid analgesics are over the counter (OTC) medication used to relive pain. Female patients are more sensitive compare with male so non- opioids more given in females. Results in this study was compared with A. Ishaqui *et al.* [10]

Conclusion

Drug utilization study of analgesics was carried in a private hospital in Guntur, Andhra Pradesh. This study reveals the wide range of analgesics prescribed were the age group (years) range from 40-49 respectively and NSAID was the most commonly prescribed analgesic in this study. The rational use of drugs should be promoted and patient should be educated about the correct dose and duration of drug. Clinical pharmacist and clinicians should update about the rational use of analgesics by updating the standard treatment guidelines, organizing programs, seminars and analgesic policy. The proper use of analgesic should be properly investigated by laboratory testing's.

Acknowledgement

We are especially thankful to the Dr. Bindesh Dadi and medical department of Costal care hospital, Guntur, Andhra Pradesh for their support and their cooperation in issuing medical reports.

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