



A Study on Drug Usage and Evaluation of Analgesics in a Private Hospital

Sudheer KV¹, Rama Brahma DR^{2*}, Srawan Kumar GY² and Blessy K²

¹Physician, Suraksha Hospitals, India

²Nalanda Institute of Pharmaceutical Sciences, India

***Corresponding author:** Rama Brahma DR, Nalanda Institute of Pharmaceutical Sciences, Guntur, Andhra Pradesh, India, Tel: +0 9949525843; Email: desireddybrahma@rediffmail.com

Received Date: April 13, 2021; **Published Date:** May 07, 2021

Abstract

The main objective is to study on drug usage and evaluation of analgesics in a private hospital. The prescriptions were collected from various departments to evaluate the usage of analgesics. 1006 prescriptions were collected in a period of 6 months. The data was represented in the form of percentages and proportions. A total of 1006 prescriptions were collected. Among these 454 were males and 552 were females. The total number of 1851 analgesics were prescribed. The percentage of opioids was 6.69%, and the percentage of non- opioids was 93.31%. The most common age group that prescribed with more number of analgesics was 40-49(years). The over usage of analgesics that prescribed by the physician may cause resistance and side effects to the body. The current study is to avoid the irrational usage of analgesics.

Keywords: Irrational use; Private hospital; Prescriptions; Analgesics

Abbreviations: NSAID: Non-Steroidal Anti-Inflammatory Drugs, COX: Cyclooxygenase, OTC: Over the Counter.

Introduction

Pain is associate unpleasant sensation occurring in variable degrees of severity as a consequence of injury, disease or emotional disorder. Analgesics are outlined because the medication that relieve pain without blocking nerve impulse conduction or markedly altering sensory function [1].

Analgesics are most commonly known as pain killers, they are most commonly taken as OTC drugs. These are the drugs that are used for relieving the pain that are experienced in the body. However according to principle of pain relief, 80-90% of pain symptoms can be adequately treated with drugs. Therefore proper pain assessment and medical treatment are key factors to improve pain symptoms, clinical outcomes and patient quality of life [2].

A kind of analgesics are presently available and they may be categorised into opioid and non-opioid analgesics. Non-opioid analgesics encompass non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen; NSAIDs are in addition divided into nonselective conventional non-steroidal anti-inflammatory drugs (NSAIDs) and selective cyclooxygenase (COX)-1 inhibitors. The goal of this evaluation changed into to explain concerns for choosing amongst the ones analgesics for the control of acute and postoperative analgesic activity. Drugs which includes antidepressants and antiepileptics also can be used to manipulate the signs and symptoms of a few continual ache conditions. Most usually used analgesics are paracetamol, susceptible opioids and NSAIDs which includes ibuprofen and aspirin. The main mechanism of action is to inhibit the pro inflammatory enzyme cyclooxygenase (COX). The categories of NSAIDS includes traditional non-selective NSAIDS (tNSAIDS) that non-specifically inhibit COX-1 and COX-2 and selective COX-2 inhibitors [3].

Acute painful disorders are treated instantly; on the opposite hand severe post-operative pain and severe visceral pain are underneath diagnosed and under treated. The another worry in inadequate pain relief is the worry of the chances of the development of physical dependence, tolerance and addiction with the use of opioid analgesics. A periodic assessment of drug utilization patterns want to be executed to permit appropriate changes with inside the prescribing behavior of clinical practitioner to make medical treatment rational and cost effective [4]. Analgesics are used to treat and prevent pain associated with inflammation or surgery. An analgesics or painkillers are the group of drugs that are used to achieve analgesia, relief from pain. Opioids acts by binding to opioid receptors which are principally found in central nervous system, peripheral nervous system and gastrointestinal tract. These opioid receptors mediate both somatic effects and psychoactive effects of opioids. Side effects of opioid analgesics may include itchiness, sedation, nausea, constipation and respiratory depression. Mainly in dental practice, opioids are mainly prescribed in combination with acetaminophen or NSAIDS to increase the activity of analgesics [5].

According to the current authorities business enterprise report, non-opioid hospital treatment is maximum well-favoured for the remedy of continual pain. Just in case of extreme post-operative pain, anti-inflammatory medication (NSAIDS) on its own aren't safely enough to alter the post-operative pain. Once hired in mixture with opioids, NSAIDS lower opioid linked factor results which include nausea, vomiting and sedation. Regardless of the availability of adequate medication pain and inflammation are still the most serious and devastating health problems affecting the 80% of the world's adult population. In most communities in the world, it is regards as a major clinical, social and economic issue. Untreated and persistent pain is the most common condition causing physical and psychological distress. Untreated inflammation also leads to loss of functioning in the work conditions, school or social activities that leads to the development of severe inflammatory diseases such as asthma, chronic inflammation, hypersensitivity, atherosclerosis, glomerulonephritis, auto immune diseases and rheumatoid arthritis. These destructive diseases are the main cause of disability and can lead to death if improperly treated and controlled [6].

Methodology

Study Design

It includes the patients, usage of analgesics in Suraksha Hospital, Guntur. To study on drug usage and evaluation of analgesics in a private hospital.

Study Period: 6 months (October 2020 – March 2021).

Source of Data: Suraksha Hospitals, Guntur (Private Hospital).

Methods of collection of data:

By evaluating prescriptions

By evaluating case sheets

Study population: All outpatients in usage of analgesics in different departments of Suraksha Hospitals, Guntur.

Sample size: 1006 prescriptions were collected and evaluated.

Sampling Criteria

Inclusion criteria: All outpatients prescribed with analgesics of age > 18 years; Prescriptions containing one or more analgesic drugs

Exclusion criteria: Adult patients of age < 18 years, pediatrics, Improper details or incomplete detailed prescriptions, Cancer patients, Pregnant and lactating females

Results and Discussion

In the current study, some are prescribed with single drug and some are prescribed with two or more drugs. There are a total of 1006 prescriptions, of which 430 are monotherapy prescriptions were depicted in Figure 1. Similar results were observed in the Chandrakantha T, et al. [7] about 116 prescriptions were collected in his study, 103 of which were monotherapy. The difference was due to the number of prescriptions collected. The choice of analgesics depends on the severity of the pain. Depending on the severity of mild to moderate pain, one analgesic is sufficient, but moderate to severe pain requires two or more analgesics. It also depends on the effectiveness and efficacy of analgesics.

| Sl.no | Parameters | No of prescriptions(n=1006) |
|-------|------------------------|-----------------------------|
| 1 | Single drug prescribed | 430 |
| 2 | Two drugs prescribed | 362 |
| 3 | Three drugs prescribed | 169 |
| 4 | Four drugs prescribed | 35 |
| 5 | Five drugs prescribed | 10 |

Table 1: Total number of prescriptions collected.

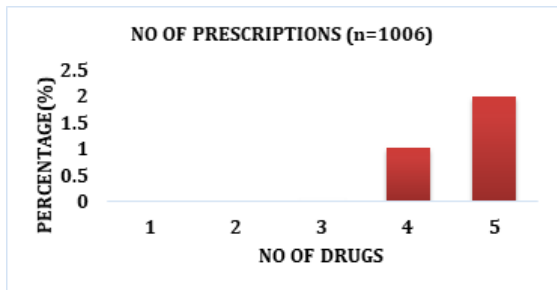


Figure 1: Total no of prescriptions collected in a tertiary care hospital.

In this study, evaluation of analgesics which includes various departments, patients were followed up on the drug usage. It was observed that 552 female patients were more than 454 male patients as shown in Figure 2. Kumarasingham T, et al. [8] observed the similar results in his study that female patients were more compared with males. The reason was due to difference in the selection of departments.

| Sl.no | Parameters | Males | Females |
|-------|-----------------|-------|---------|
| 1 | No. of patients | 454 | 552 |

Table 2: Gender distribution.

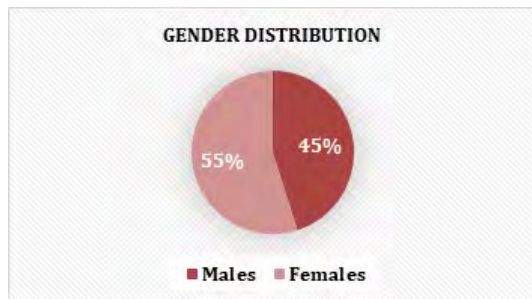


Figure 2: Gender differentiation of both males and females.

In this observational study we considered the age group between 19 to 89 years those are adults which were depicted in Figure 3. In this we did not include any neonates, children and adults who were age group between 0-18 years. Because they are very sensitive and prominent to the adverse drug reactions caused by the analgesics so, very less prescribed in this age group. In our study, we observed that the 40-59 years age group was assigned with a large number of analgesics, as we observed the same result when examining Vidisha VP, et al. [9] in his study we found that people with 40-70 age group were prescribed with more number of analgesics. This is due to a general trend, because they are a productive age group and actively involved in socio-economic activities that may lead to stress and aging, thereby making them vulnerable to

diseases that may require surgery.

| Sl.no | Age (Years) | No of patients | Percentage (%) |
|-------|-------------|----------------|----------------|
| 1 | > 18 | 38 | 3.78 |
| 2 | 20-29 | 103 | 10.24 |
| 3 | 30-39 | 196 | 19.48 |
| 4 | 40-49 | 247 | 24.55 |
| 5 | 50-59 | 232 | 23.06 |
| 6 | 60-69 | 129 | 12.82 |
| 7 | 70-79 | 48 | 4.77 |
| 8 | 80-89 | 13 | 1.3 |

Table 3: Age wise distribution.

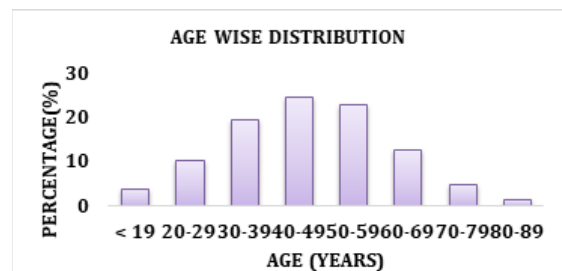


Figure 3: Age wise distribution in the given prescriptions.

Among the department wise which were prescribed with analgesics in our study, the department of Neurology was found to be mostly prescribed with analgesics shown in Figure 4 due to pain inducing Neuropathy disorders such as migraine, vascular headaches etc. Maheswari P, et al. [10] in her study, analgesics was most commonly prescribed for orthopaedic department as compared to this study analgesics was mostly prescribed for the neurology department. The difference was due to collection of cases from various types of departments.

| Sl.no | Department wise | Frequency (n=1006) | Percentage (%) |
|-------|----------------------|--------------------|----------------|
| 1 | Neurology | 583 | 57.95 |
| 2 | General medicine | 187 | 18.59 |
| 3 | Orthopaedics | 181 | 17.99 |
| 4 | Nephrology | 47 | 4.67 |
| 5 | Emergency and Trauma | 8 | 0.8 |

Table 4: Department wise distribution.

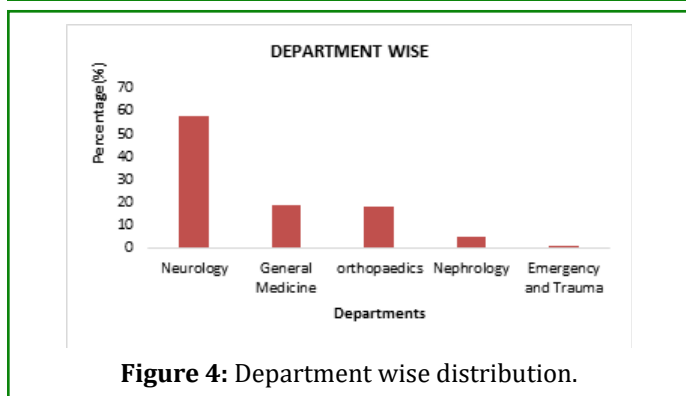


Figure 4: Department wise distribution.

In current study we observed that the usage of non-opioids (93%) was very high compared to the opioids (7%) which were depicted in Figure 5, we observed the similar results in Shivaleela B, et al. [11] the study showed that non-opioids (60%) were commonly prescribed compared with opioids (40%). This indicates that non-opioid have less side effects than opioids. This shows that tramadol (opioids) controlled the severe pain and then shifted to non-opioids to prevent opioid addiction. The difference was observed due to limited study period.

| SI no | Parameters | No of Analgesics(n=1851) |
|-------|-------------|--------------------------|
| 1 | Opioids | 124 |
| 2 | Non-opioids | 1727 |

Table 5: Comparison of Opioids and Non-opioids.

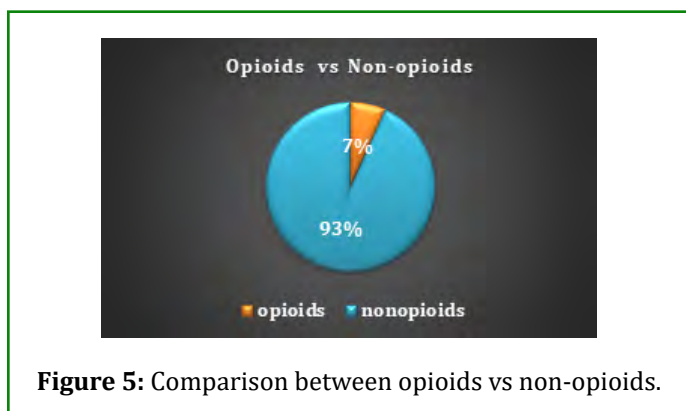


Figure 5: Comparison between opioids vs non-opioids.

In this study more female patients (54.84%) were under operative procedures when compared to male patients (45.16%) the results were shown in Figure 6, the reason may be due to more number of female admitted patients in the hospital. The results are quite opposite to the Hossein V, et al. [12] in his study, it was found that men (66%) was prescribed more with opioids when compared with women (34%). The difference is that, it includes patients with trauma, poisoning

and other specific consequences of external causes and diseases of digestive system, this study includes patients with neuropathic disorders.

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 was 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.

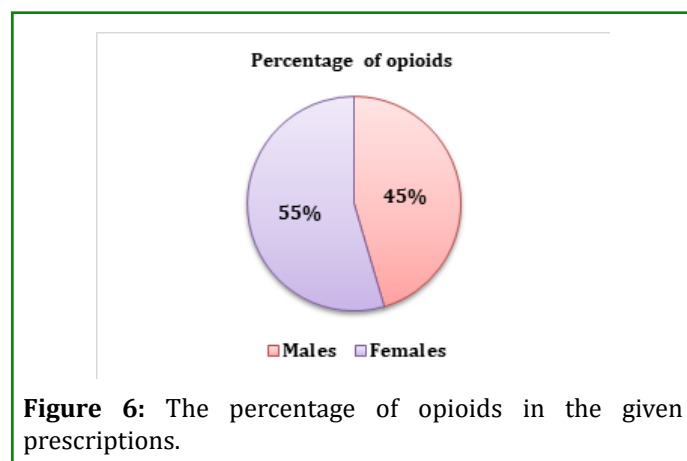


Figure 6: The percentage of opioids in the given prescriptions.

In this 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 depicted in Figure 7. The non-opioid analgesics are over the counter (OTC) medication used to relieve pain. Female patients are more sensitive when compared to male patients.

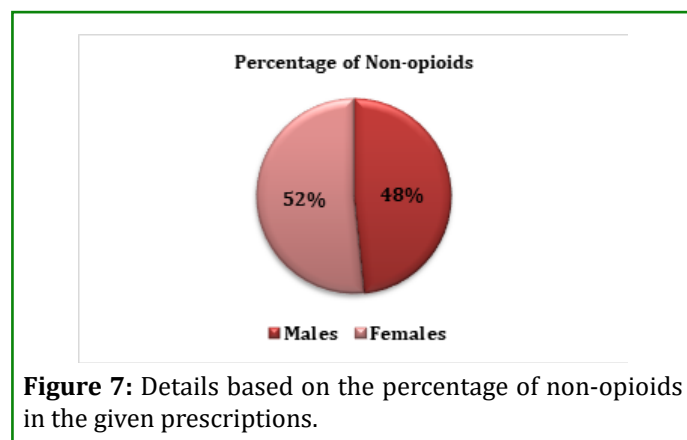


Figure 7: Details based on the percentage of non-opioids in the given prescriptions.

In this total no of 1006 prescriptions were evaluated. NSAIDS was found to be the most commonly prescribed analgesic (39.28%), followed by Adjuvant analgesics (29.49%), Combination analgesics (20.05%), Opioid analgesics (6.56%), Aniline analgesics (4.71%) the results were statistically depicted in Figure 8. As we observed the similar results in the study of Ashok k, et al. they found that NSAIDS (39.22%) were commonly prescribed. As we observed the exact opposite results in Ashok K, et al. [13] in his study they observed that males (240) were high when compared with females (188) in usage of analgesics. The difference was due to the inclusion of only orthopedic department. The reason for wide number of prescriptions of NSAIDS may be because it is more effective in relieving inflammation and pain. 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. 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 [8].

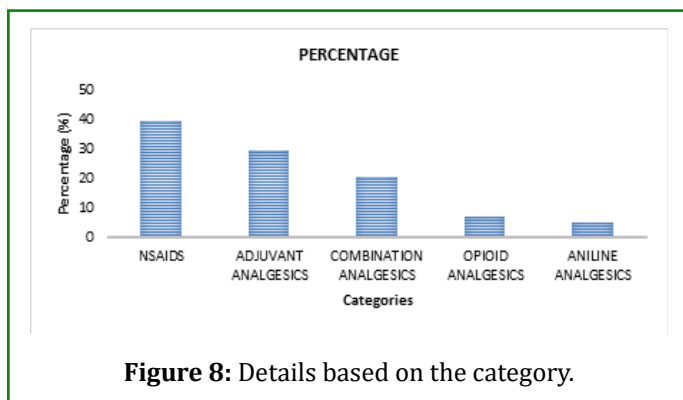


Figure 8: Details based on the category.

Conclusion

A Study on drug usage and evaluation of analgesics was conducted in a private hospital in Guntur. The study revealed the wide range of analgesics prescribed were the ages ranging from 40-49 years respectively and NSAIDS were the most commonly prescribed analgesics in our study. The rational usage of analgesics should be promoted, as the over usage of analgesics cause resistance and side effects to the body. Proper measures are required to prevent the irrational usage of analgesics. This can be upgraded by conducting seminars, training and educational programmes and proper training of staff in pain management. Moreover, inclusion of pharmacist in health care team with proper designated authorities can also play a key role in overcoming the irrational use of analgesics.

Acknowledgement

We are grateful to the patients who participated in the study. Furthermore, we are thankful to Dr. V. Sudheer Kumar. We thank HR manager and Hospital ethics committee of Suraksha Hospitals.

References

1. Sobia Khan, Azfar A, Ishaqui, Sheikh AK, Iyad NM, et al. (2017) Drug utilization review of opioid and non-opioid analgesic in tertiary care hospital: Pain management study. *Lat Am J Pharm* 36(8): 1580-1585.
2. Hyun JO, Yeon HS, Young MJ, Kyung SC, Eunsook L, et al. (2020) Drug use evaluation of opioid analgesic in pain management among patients with hematopoietic stem cell transplantation. *Blood Res* 55(3): 151-158.
3. Ong CKS, Link P, Tan CH, Seymour RA (2007) An Evidence-Based Update on Nonsteroidal Anti-Inflammatory Drugs. *J Clin Med Res* 5(1): 19-34.
4. Srinivas B, Bhushan A (2020) Drug utilization of analgesics in postoperative orthopaedic in patients in tertiary care hospital, Belagavi: A prospective observational study. *Euro J Pharm Med Res* 7(1): 333-337.
5. Kim SJ, Seo JT (2020) Selection of analgesics for the management of acute and postoperative dental pain: a mini-review. *J Periodontal Implant Sci* 50(2): 68-73.
6. Cozowicz C, Poeran J, Zubizarreta N, Liu J, Pichleret L, et al. (2019) Non-opioid analgesic modes of pain management are associated with reduced postoperative complications and resource utilization: a retrospective study of obstructive sleep apnoea patients undergoing elective joint arthroplasty. *Br J Anaesth* 122(1): 131-140.
7. Chandrakantha T, Rajesh B, Neha K (2019) Drug utilization pattern of analgesics among postoperative in a tertiary care hospital: A prospective study. *Indian J Pharm Pharmacol* 6(4): 137-141.
8. Kumarasingam T, Revathy S, Mukherjee D (2014) Drug utilization pattern of analgesics among postoperative patients in a tertiary care hospital. *Der Pharmacia Lettre* 6(3): 40-46.
9. Vidisha VP, Vandana AB (2020) Observing drug utilization trends of analgesics in indoor surgical patients in tertiary care teaching hospital. *Asian J Pharm Clin Res* 13(5): 47-50.
10. Maheswari P, Praveen D, Ravichandiran V (2014) Drug

- Utilization Evaluation (Due) of analgesics in Tertiary Care Teaching Hospital. *Int J Frontiers Sci Tech* 2(1): 57-65.
11. Shivaleela B, Santosh G (2017) A study of drug utilization pattern of analgesics in postoperative patients of tertiary care hospital. *MedPulse Int J Pharmacol* 1(2): 28-32.
 12. Hossein V, Hamed S, Nahidd EJ, Bovand T, Saba V, et al. (2016) Parenteral Opioid Analgesics utilization Pattern in Amir-al-Momenin Hospital, Zabol-IRAN. *Int J Med Health Sci* 5(8): 112-119.
 13. Ashok K, Vasant RC, Arshad M, Raghunanadan M, Fayazuddin M (2019) A study of drug utilisation pattern in the management of osteoarthritis in the orthopaedic department of tertiary care hospital. *Indian J Pharm Pharmacol* 6(2): 37-41.