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Prescribing Pattern of Analgesic Drugs at Boru Meda Hospital, North East, Amhara, Ethiopia

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Abstract

Introduction: Pain is the sensory and emotional experience, which altered human health and well-being. When pain does not resolve, it may be associated with a serious disease, condition, or injury that needs timely medical care and also irrational prescribing of analgesics, which is possible to lead to unwanted side effects. Therefore, this study has been intended to evaluate the prescribing pattern of analgesics drugs at Boru Meda Hospital. **Method:** A retrospective cross sectional descriptive study was conducted. A total of 200 prescriptions containing analgesic were systematically collected by using well designed and pretested Data collection format. The necessary information was extracted from the prescription sheets by trained pharmacists and later analyzed using SPSS version 20 software. **Result:** Regarding prescribed analgesic acetaminophen 115 (36.9%) was the most prescribed, and then followed diclofenac 83 (26.6%) and Ibuprofen 64 (20.5%). The maximum number of analgesic drugs was administered to patients by oral rout (75%), which is followed by parenteral (19%). About dosing approach 94% acetaminophen prescribed as needed (PRN) based, whereas ibuprofen 59.4% and tramadol 40% were prescribed as twice a day (bid) based. Acute fibril illness (13.6%) was the highest reason for prescribing analgesics. **Conclusion:** Majority of the prescription analgesics drugs were prescribed as PRN dosing approaches with a very large percentage of oral medications. Some of the prescriptions revealed irrational prescribing of analgesics, in accordance of clinical indication, frequency of administration and combination of analgesic.

Keywords

Analgesics, Boru Meda Hospital, Opioids, NSAIDS

1. Introduction

Pain is one of the most common complaints, which is unpleasant emotional and sensory experience associated with actual or potential tissue damage [1] [2]. Pharmacological approaches are using non opioid and opioid analgesics drugs by decreasing the generation of the mediators of pain at the site of tissue damage and also acting at higher brain centers, controlling the affective components of the pain [3]. Analgesics are defined as the drugs that relieve pain without blocking nerve impulse conduction or markedly altering sensory function [4]. Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed group of analgesics drugs in clinical practice for the management of acute and moderate pain and inflammation [5].

The global importance of Rational use of medicines (RUM) is a great issue, which evaluating the accurate diagnosis, rational prescribing practice of prescribers and the pharmacist should ensure that the right drugs reach the right patient in prescribed dosage and quantity, with clear instructions on its appropriate use [6] [7].

The aim of this study is to obtain information regarding the prescribing pattern of analgesic by the prescribers in the inpatient departments (IPD) and outpatient departments (OPD) of Boru Meda Hospital (BMH).

2. Methods

A retrospective cross sectional descriptive study was conducted at IPD and OPD of BMH, North East Amhara, Dessie, Ethiopia, 2017. The prescriptions contain opioid and non opioid analgesic drugs were collected from patients attending the OPD and IPD. A total of 200 prescriptions containing opioid and non opioid analgesic (100 from each OPD and IPD) were collected. Data collection format was designed and trained pharmacists at the pharmacy department recorded the required data and information. The information extracted from the prescription sheets, later analyzed for information like-type of analgesic and its recurrence, rout of administration, frequency of administration, clinical indications for which analgesic were prescribed, pharmacological classes of analgesic prescribed.

Data generated from the questionnaire were analyzed using SPSS version 20 software after manual data verification and cleaning. Statistical analysis was not done due to it was a descriptive study.

Ethical Consideration

The study was approved by chief executive officer, and the head of the pharmacy department in the BMH. A formal letter was written from BMH and given to pharmacy department and also confidentiality of the information obtained from the patient's prescription reviewed throughout the study period was kept.

3. Result

During the study period, a total of 200 prescriptions prescribed to 111 females

(55.5%) and 89 males (44.5%). The mean age of the patients included in the study was found to be 48.5 ± 15.5 years (Table 1).

Among 312 analgesic prescribed drugs both in the IPD and OPD acetaminophen 115 (36.9%) was the most prescribed non opioid analgesic drug, then diclofenac 83 (26.6%) and Ibuprofen 64 (20.5%) were followed (Table 2).

As shown in Figure 1, for a total of 200 patients 312 Analgesic Drugs were prescribed, out of this 155 (50%) were NSAIDs, followed by 115 (37%) acetaminophen and 42 (13%) Opioid Analgesic was accounted.

Table 1. Gender and age distribution frequency.

Variables	Frequency n (%)
Gender	
Male	89 (44.5%)
Female	111 (55.5%)
Age groups (year)	48.5 ± 14.5

Table 2. The percentage use of analgesics drugs.

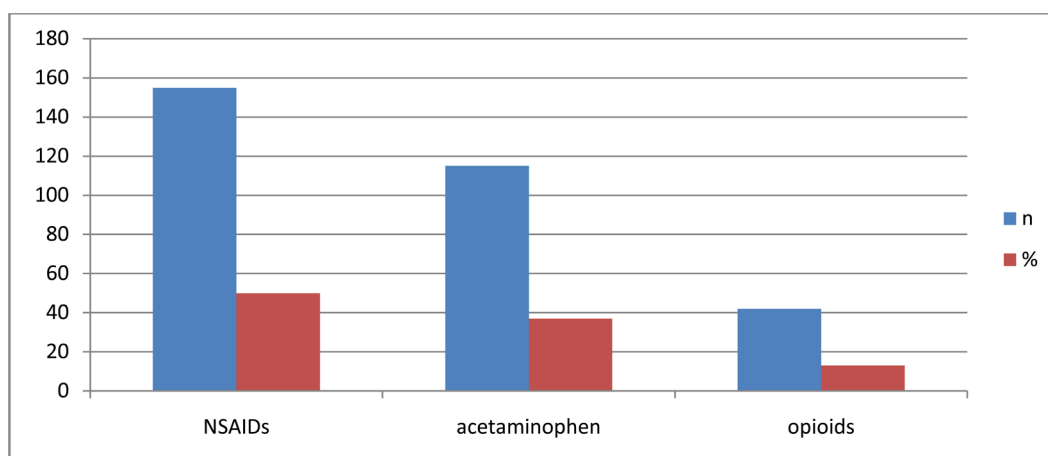| Drugs	Frequency	%
Acetaminophen	115	36.9
Diclofenac	83	26.6
Ibuprofen	64	20.5
Tramadol	40	12.8
Indomethacin	4	1.3
Piroxicam	4	1.3
Pethidine	2	0.6
Aspirin	0	0
Morphine	0	0
Total	312	100

Figure 1. The proportion of prescribed class of analgesic drugs.

As shown in Table 3, 94% of acetaminophen, 34% diclofenac, and 38% (24) Ibuprofen were prescribed as PRN dosing approaches, whereas Ibuprofen 59.4%, Tramadol 40% were prescribed as twice a day (bid) based. The highest percentage of Diclofenac injection 48% (40) was administered at stat based.

The maximum number of analgesic drugs administered to patients by oral rout (75%), followed parenteral (19%) and rectal (6%) drug administration rout (Figure 2).

The clinical indications for prescribing analgesics in this hospital were the highest prescribed for acute fibril illness and then followed by dyspepsia, cataract, pneumonia, and upper respiratory tract infection accounts more than half (53%) (Table 4).

4. Discussion

Regarding this study, acetaminophen (37.6%) was found the most prescribed drug; this may be showing minimal adverse effects with adequate efficacy as analgesic and antipyretic effect. According to the researches carried out in Nigeria, Bangladesh and Ghana Hospitals where indicated a similar result, that shows the largest percentage of prescribed analgesic drugs was acetaminophen [8] [9] [10]. However, other studies conducted in Sweden, Croatia and India showed that a controversial result, diclofenac was the most prescribed drug [11] [12] [13].

Table 3. Frequency of administration of analgesic drugs.

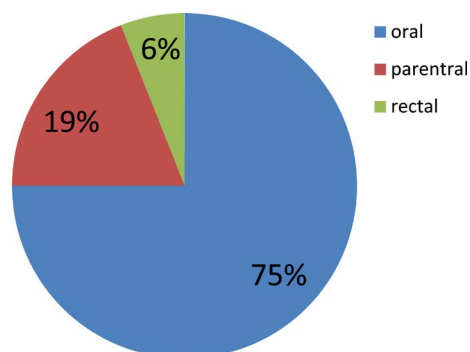| Drugs	PRN Based n(%)	Daily Based n (%)	Bid Based n (%)	Tid Based n (%)	Qid Based n (%)	Stat Based n (%)	Not Specified n (%)
Acetaminophen	108 (94)	0	0	0	3 (2.6)	0	4 (3.5)
Diclofenac	28 (34)	1 (1.2)	9 (11)	3 (4)	0	40 (48)	2 (2.4)
Ibuprofen	24 (38)	2 (3.1)	38 (59.4)	0	0	0	0
Tramadol	17 (42.5)	0	16 (40)	4 (10)	0	3 (7.5)	0
Indomethacin	0	3 (75)	1 (25)	0	0	0	0
Piroxicam	2 (50)	0	2 (50)		0	0	0
Pethidine	0	0	1 (50)	0	0	1 (50)	0

Figure 2. The percentage route of administration of analgesics.

Table 4. Frequency of diagnosis for reason of prescribed analgesic.

Diagnosis	Frequency n (%)	Diagnosis	Frequency n (%)
Acute fibril illness	27 (13.6)	Urinary tract infection	7 (3.5)
Dyspepsia	26 (13.1)	Fibro-myalgia	6 (3.0)
Cataract	21 (10.6)	Headache	6 (3.0)
Pneumonia	18 (9.0)	Post operation	6 (3.0)
Upper respiratory tract infection	13 (6.7)	typhoid fever	5 (2.5)
Rheumatoid arthritis	10 (5.0)	Muscle strain	3 (1.5)
Soft tissue injury	10 (5.0)	nephritic syndrome	2 (1.0)
Ulcer 2° to leprosy	10 (5.0)	Sepsis	2 (1.0)
Trauma	9 (4.5)	Corneal tear	1 (0.5)
Hypertension	8 (4.0)	Glaucoma	1 (0.5)
MDR TB	7 (3.5)		

This study showed that NSAIDs were more prescribed analgesic drugs, out of this class diclofenac (26.6%) and ibuprofen (20.5%) more prescribed than indomethacin (1.3%) and piroxicam (1.3%). According to Rahul D., *et al.* study in India, ibuprofen was the most prescribed, followed by diclofenac [14]. The use of NSAIDs for the treatment of pain regarding in dental case, ibuprofen is an ideal prototype that were recommends for consideration in pain of dental origin [15].

Acetaminophen uses most of the time is irrational, it can cause serious liver problem even with less than maximum dose which is usually a 4 g/day. About 69% patients were use Acetaminophen and NSAIDs dually and the dual user was mostly for treatment of arthritis pain, this reflects irrational prescribing practice [16].

The present study shows that Opioid analogues analgesic drugs like tramadol and pethidine were prescribed 12.8% & 0.6% respectively (Table 1). The trend of prescribing strong opioids (like morphine, pethidine) was very low. This may be as a result of the misgiving of the issue of tolerance and addiction and/or these classes of drugs are reserved only for severe pain.

The present study findings were indicated that majority of analgesic drug prescribed as needed (prn) based frequency of administration, 94% acetaminophen, 42.5% tramadol, 38% ibuprofen, 34% diclofenac and 50% piroxicam (Table 3). Non opioid analgesic taken on a regular schedule, not as prn based. Choosing of prn dosing is beneficial when rapid dose escalation or for patients who have rapidly decreasing analgesic requirements or intermittent pain separated by pain free intervals [3].

According to this study, 13.6% acute fibril illness was the most common clinical indication for analgesic drug prescribed, followed by 13.1% dyspepsia and 10.6% cataract. The matter of use of analgesia is the incidence of gastrointestinal (GI) bleeding side effects, specifically NSAID [17]. The safest drug in this regard has been noted as acetaminophen and Ibuprofen [18]. However, the overall NSAID

therapy associated side effects has been related to the frequency and duration of treatments [19]. Administration of analgesic drug to relive pain related to dyspepsia indicates irrational use of medication.

5. Conclusion

Majority of the prescription analgesics drugs were prescribed as PRN dosing approaches with a very large percentage of oral medications. Some of the prescriptions revealed irrational prescribing of analgesics, in accordance of clinical indication, frequency of administration and combination of analgesic.

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