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ASSESSMENT OF PRESCRIPTION PATTERN OF ANTI-INFLAMMATORY DRUGS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: To assess prescription pattern of anti-inflammatory drugs in tertiary care hospital. **Material and Methods:** We enrolled 120 patients and parameters such as average number of drugs per encounter, average number of NSAIDs per encounter, percentage of encounters with NSAIDs prescribed, percentage of encounters with an injection of NSAID prescribed, percentage of encounters with nonselective NSAIDs prescribed, percentage of encounters with selective COX-2 NSAIDs prescribed, percentage of NSAIDs prescribed by generic names, percentage of NSAIDs prescribed from NLEM, percentage of encounters with a fixed dose combination of NSAIDs prescribed and percentage of encounters with NSAIDs and gastroprotective agent co-prescribed were recorded. **Results:** Age group <18 years comprised of 12 males and 15 females, age group 18-49 years had 20 males and 22 females and >50 years had 33 males and 18 females. NSAIDS prescribed were aspirin in 5%, ibuprofen in 11%, paracetamol in 15%, diclofenac in 17%, aceclofenac in 12%, etoricoxib in 28%, piroxicam in 4% and etodolac in 8%. The difference was significant ($P< 0.05$). Average number of drugs per encounter was 2.24%, average number of NSAIDs per encounter was 1.37%, percentage of encounters with NSAIDs prescribed was 100%, percentage of encounters with an injection of NSAIDs prescribed was 0, percentage of encounters with nonselective NSAIDs prescribed was 72%, percentage of encounters with selective COX-2 NSAIDs prescribed was 28%, percentage of NSAIDs prescribed by generic names was 94%, percentage of NSAIDs prescribed from NLEM was 63.5%, percentage of encounters with a fixed dose combination of NSAIDs prescribed was 26.5% and percentage of encounters with NSAIDs and gastroprotective agent co-prescribed was 38%. **Conclusion:** Among COX-1 inhibitors, Diclofenac was the most commonly prescribed NSAIDs from NLEM, and Etoricoxib was found to be the most commonly prescribed among COX- 2 inhibitors.

Keywords: Analgesics, non-steroidal anti-inflammatory drugs.

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Introduction

Over the past two decades, non-steroidal anti-inflammatory drugs (NSAIDs) have played a central role in the treatment of pain and inflammation. NSAIDs are the largest single group of drugs used globally, constituting more than 20 % of all prescriptions.[1] It is found that more than thirty million individuals consume NSAIDs daily. Around 400 formulations of NSAIDs are marketed in India, resulting in widespread exposure of patients to this class of drugs and its adverse effects.[2]

Analgesics comprising nonopioid (e.g., paracetamol and nonsteroidal anti-inflammatories [NSAIDs]) or opioids are usually prescribed for the control of pain and inflammation in the elderly patients.[3] It has been documented that analgesic is the most primarily prescribed drug in a secondary health-care facility in Nigeria and accounts for 12.3% of the total prescription in a primary care setting in South Africa.[4] It has been discovered by the American Geriatrics Society Panel on Persistent Pain among the elderly that nonopioid analgesics are the most commonly used drugs for pain management, although studies have established a rise in the use of opioid analgesics in Europe and North America. The use of NSAIDs could result in an increase in a mean arterial blood pressure of 5 mmHg.[5] The administration of opioids to elderly patients may be associated with less risk than that of NSAIDs, especially in those elderly who are at particular risk of NSAIDs-related events. For all the above reasons, studies evaluating the pattern of prescriptions of NSAIDs are very important.[6] This study evaluated prescription pattern of anti-inflammatory drugs in tertiary care hospital.

Material & Methods

After considering the utility of the study and obtaining approval from ethical review committee of the institute, we selected 120 patients in tertiary care hospital.

Data such as name, age, gender etc. was recorded. Parameters such as average number of drugs per encounter, average number of NSAIDs per encounter, percentage of encounters with NSAIDs prescribed, percentage of encounters with an injection of NSAID prescribed, percentage of encounters with nonselective NSAIDs prescribed, percentage of encounters with selective COX-2 NSAIDs prescribed, percentage of NSAIDs prescribed by generic names, percentage of NSAIDs prescribed from NLEM, percentage of encounters with a fixed dose combination of NSAIDs prescribed and percentage of encounters with NSAIDs and gastroprotective agent co-prescribed were recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Table I: Age and gender wise distribution

Age group (years)	Male	Female
<18	12	15
18-49	20	22
>50	33	18

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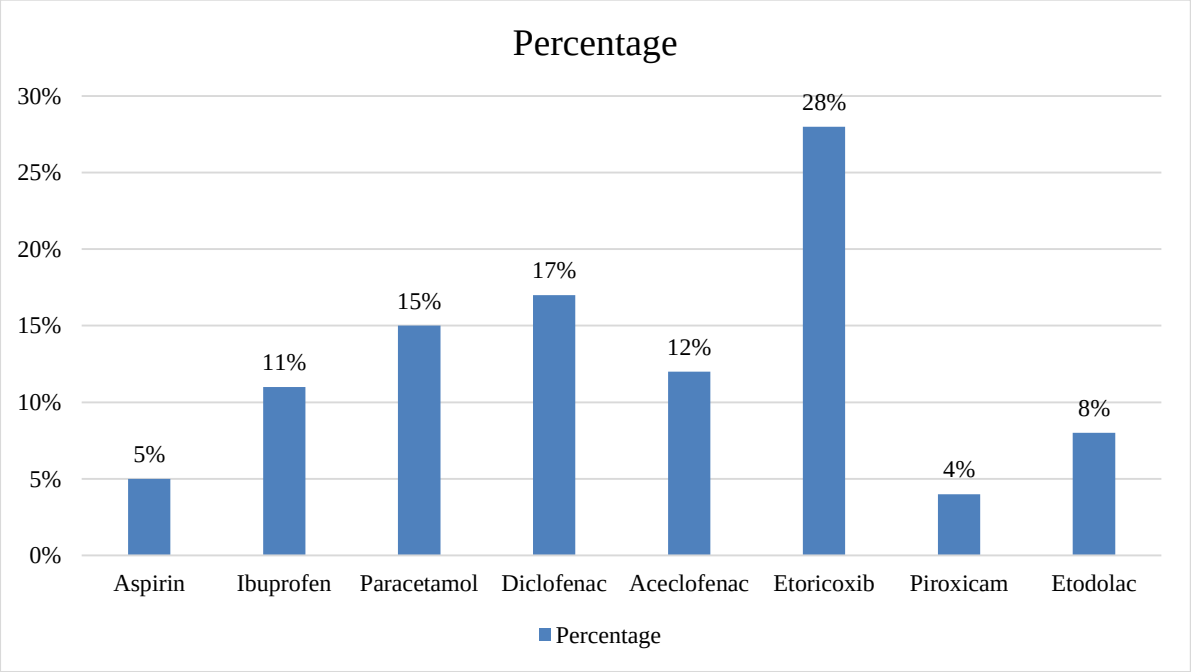
Table I shows that age group <18 years comprised of 12 males and 15 females, age group 18-49 years had 20 males and 22 females and >50 years had 33 males and 18 females.

Table II: Types of NSAIDS prescribed

NSAIDS	Percentage	P value
Aspirin	5%	0.05
Ibuprofen	11%	
Paracetamol	15%	
Diclofenac	17%	
Aceclofenac	12%	
Etoricoxib	28%	
Piroxicam	4%	
Etodolac	8%	

Table II, graph I shows that NSAIDS prescribed were aspirin in 5%, ibuprofen in 11%, paracetamol in 15%, diclofenac in 17%, aceclofenac in 12%, etoricoxib in 28%, piroxicam in 4% and etodolac in 8%. The difference was significant (P< 0.05).



Graph 1: Types of NSAIDS prescribed

Table III: WHO core prescribing indicators

Parameters	Percentage
average number of drugs per encounter	2.24
average number of NSAIDs per encounter	1.37
encounters with NSAIDs prescribed	100
encounters with an injection of NSAIDs prescribed	0

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encounters with nonselective NSAIDs prescribed	72
encounters with selective COX-2 NSAIDs prescribed	28
NSAIDs prescribed by generic names	94%
NSAIDs prescribed from NLEM	63.5%
encounters with a fixed dose combination of NSAIDs prescribed	26.5%
encounters with NSAIDs and gastroprotective agent co-prescribed	38%

Table III shows that average number of drugs per encounter was 2.24%, average number of NSAIDs per encounter was 1.37%, percentage of encounters with NSAIDs prescribed was 100%, percentage of encounters with an injection of NSAIDs prescribed was 0, percentage of encounters with nonselective NSAIDs prescribed was 72%, percentage of encounters with selective COX-2 NSAIDs prescribed was 28%, percentage of NSAIDs prescribed by generic names was 94%, percentage of NSAIDs prescribed from NLEM was 63.5%, percentage of encounters with a fixed dose combination of NSAIDs prescribed was 26.5% and percentage of encounters with NSAIDs and gastroprotective agent co-prescribed was 38%.

Discussion

There is an increase in sensitivity to certain analgesic drugs, due to the physiological changes in older people, notwithstanding analgesics should be titrated to the patients' response.[7] Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed analgesic; however, they are associated with a risk of adverse events, involving gastrointestinal (GI) ulceration and bleeding and cardiovascular effect, which can increase morbidity and mortality among the elderly.[8] Pharmacokinetics and medication metabolism change with age, and elderly patients mostly have circumstances or medications that predispose them to greater risk for NSAID use associated GI symptoms.[9] This study evaluated prescription pattern of anti-inflammatory drugs in tertiary care hospital.

Our results showed that age group <18 years comprised of 12 males and 15 females, age group 18-49 years had 20 males and 22 females and >50 years had 33 males and 18 females. Geetha et al[10] evaluated the prescribing pattern for nonsteroidal anti-inflammatory drugs in the tertiary care teaching hospital. Out of 500 prescriptions included in the study, the total number of drugs prescribed was 1098, of which were nonsteroidal anti-inflammatory drugs. Based on the World Health Organization's drug use indicators, the average number of drugs per encounter was 2.19 % and the average number of nonsteroidal anti-inflammatory drugs per encounter was 1.38 %. Out of all the nonsteroidal anti-inflammatory drugs prescribed, 428 (62.20%) were from National List of Essential Medicine India 2015 and 678 (98.5 %) nonsteroidal anti-inflammatory drugs were prescribed by generic name. Among the study population, only 40 % of patients were prescribed Proton Pump Inhibitors along with nonsteroidal anti-inflammatory drugs. Proton Pump Inhibitors are effective in ulcer prophylaxis in their standard dose. The present study concluded that among cyclooxygenase-1 inhibitors, Diclofenac was the most commonly prescribed nonsteroidal anti-inflammatory drugs from the national list of essential medicine. The most frequently prescribed cyclooxygenase-2 inhibitor in this study was Etoricoxib. The percentage of analgesic

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prescribed by generic name was excellent. However, the average number of drugs per prescription deviated from the World Health Organization's rational drug use indicator.

Our results showed that NSAIDS prescribed were aspirin in 5%, ibuprofen in 11%, paracetamol in 15%, diclofenac in 17%, Aceclofenac in 12%, etoricoxib in 28%, piroxicam in 4% and etodolac in 8%. Sholabi et al[11] evaluated the prescription pattern of analgesics and described the co-prescribing of gastroprotective agents with non-steroidal anti-inflammatory drugs (NSAIDs) among elderly patients. A total of 337 patients case files were reviewed, the mean age was 72 ± 8.8 years, and 210 (62.3%) were females. There were a total of 2074 medications prescribed, with 733 (35.3%) being analgesics. Majority of the elderly patients (259, 76.9%) were on nonopioids, with 252 (74.8%) on NSAIDs. Paracetamol was the most commonly prescribed analgesics (181, 24.6%), followed by diclofenac/misoprostol (177, 24.1%), opioid analgesic prescribed was 88 (12.0%), with paracetamol/codeine 58 (65.9%), and tramadol 16 (18.2%) being the most prescribed opioid. A significant proportion of the hypertensive elderly patients (160, 78.8%; $P < 0.036$) were on NSAIDs. The oral route of administration (302, 89.6%) was the most common route of administration. Majority (310, 92%) of elderly patients taking NSAIDs had a co-prescription for gastroprotective agents.

We found that average number of drugs per encounter was 2.24%, average number of NSAIDs per encounter was 1.37%, percentage of encounters with NSAIDs prescribed was 100%, percentage of encounters with an injection of NSAIDs prescribed was 0, percentage of encounters with nonselective NSAIDs prescribed was 72%, percentage of encounters with selective COX-2 NSAIDs prescribed was 28%, percentage of NSAIDs prescribed by generic names was 94%, percentage of NSAIDs prescribed from NLEM was 63.5%, percentage of encounters with a fixed dose combination of NSAIDs prescribed was 26.5% and percentage of encounters with NSAIDs and gastroprotective agent co-prescribed was 38%. Alashakka MA et al[12] revealed that non-selective NSAIDs were the most commonly prescribed, with diclofenac sodium being the most frequently prescribed (26.6 %), followed by meloxicam (12.8 %) and ibuprofen the least common (12 %). A combination of two non-selective NSAIDs was also reported. Selective COX-2 inhibitors were much less commonly used. This class of drug was mainly prescribed for infective conditions (29.3%), fever (9.3%), orthopaedic pain (8.1%) and musculoskeletal pain (7.8%).

The shortcoming of the study is small sample size.

Conclusion

Authors found that among COX-1 inhibitors, Diclofenac was the most commonly prescribed NSAIDs from NLEM, and Etoricoxib was found to be the most commonly prescribed among COX- 2 inhibitors.

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