



# International Journal of Pharmaceutical Erudition

Research for Present and Next Generation

**NOV. 2020**

Vol: 10 Issue:03  
(23-29)





## Research Paper

# MONITORING OF NSAIDs AND USE OF PROTON PUMP INHIBITORS ALONG WITH NSAIDs IN ELDERLY PATIENTS

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Majority of elderly persons has significant pain problems and persistent pain interferes with activities of daily living and quality of life, yet detection and management of pain remain inadequate among elderly patients. The main objective of the study is to assess the prescribing practices of Non Steroidal Anti-Inflammatory Drugs (NSAIDs) and concomitant use of Proton Pump Inhibitors (PPIs) among the elderly patients. Both male and female patients above the age of 60 years prescribed with NSAIDs and PPIs were included for the study. The data was collected from the out-patient case sheets of the patients who were attending Medicine and Orthopedic out-patient departments (OPDs). The study was carried out for 9 months. Out of 106 patients, 78 patients were prescribed with NSAIDs in Orthopedic OPDs whereas, 28 patients were prescribed with NSAIDs in Medicine OPDs. During the prospective study, NSAIDs were prescribed more for Osteoarthritis (OA) patients [21(26.92%)] in Orthopedic OPDs and among OA patients, etodolac were highly prescribed 10 (47.62%) patients. In Medicine OPDs, 22 patients out of 28 patients came to medicine OPD for the treatment of Myalgia/ Polyalgia for which NSAIDs were prescribed. Among 22 patients with Myalgia/ Polyalgia, diclofenac sodium was prescribed more among 7 (31.82%) patients. Although the prescribing pattern of NSAIDs and concomitant use of PPIs was analyzed by the present study, the limitations of the study were the results were based on the study on only 106 patients. A multi centre study for a longer duration, involving more number of patients need to be carried out further in order to come to a final conclusion on the exact prescribing patterns of NSAIDs and co-prescribing of proton pump inhibitors among the elderly people.

**Key Words:** Elderly people, NSAIDs, Gastro protective drugs, PPIs, H2 receptor blockers..

## INTRODUCTION

Over the previous century, there has been a dramatic rise in the number and proportion of elderly people in the developed countries. Such increase have been primarily due to declining infant and child mortality due to improved standards of housing, hygiene, nutrition, falling birth rates and advances in curative and

preventive medicine. But in developing countries, this demographic change has not yet occurred to a great extent. In India, the proportion of people aged over 60 years only increased from 5.5 percent to 7 percent between 1951 and 1995. However, the proportion of elderly people is likely to increase dramatically



this century, primarily due to falling birth rates. According to a study, it was observed that there are 68 million people in India aged over 60 years and as this number grows, it will become increasingly important for pharmacists to contribute to the rational and safe drug use in the elderly.<sup>1,2</sup>

During aging, there is an increase in chromosomal structure abnormalities, DNA cross-linking and frequency of single strand breaks; a decline in DNA methylation; a loss of DNA telomeric sequences. The primary structure of proteins is unaltered, but there is an increase in post translational changes, deamidation, oxidation, cross-linking and non enzymatic glycation. Mitochondrial structure deterioration also observed among the geriatric patients. If aging exists as a distinct process, there is consensus that the mechanisms are likely multifactorial, environmentally influenced, and species-specific, if not organ- and cell-specific, making the paucity of available human data particularly problematic.<sup>3,4</sup>

Pharmacokinetic alterations in older persons are an excellent example of age-related loss of physiologic reserve, resulting in changes with high inter-individual variability. The most important of these changes is the loss of renal function with aging, resulting in decreased clearance of many commonly used drugs. In addition, the loss of lean body mass and later, the loss of fat mass, lead to an altered volume of distribution for many hydrophilic and lipophilic

drugs, respectively. Less understood, and likely with more individual variation, is the decrease in hepatic cytochrome P-450 enzyme activity, altering the metabolism of many drugs.<sup>5,6</sup>

Presentations in older patients have a more diverse differential diagnosis because multiple pathology is common. It means there are usually a number of causes for any single problem, and side-effects from medication may be a contributory factor. A patient may fall because of osteoarthritis of the knees, postural hypotension due to diuretic therapy for hypertension, and poor vision due to cataracts. All these factors have to be addressed to prevent further falls, and this principle holds for most of the common presenting problems in old age.<sup>7</sup>

Pain management for elderly patients is often inadequate. Persistent pain can interfere with physiological functions, increase suffering, and decrease quality of life. Improvements in the detection, assessment, and treatment of chronic pain can optimize the care that is provided to the elderly patient. The prevalence of persistent pain increases with age; increase in joint pain and neuralgias are particularly likely. Majority of elderly persons have significant pain problems. Persistent pain interferes with activities of daily living and quality of life, yet detection and management of chronic pain remain inadequate.<sup>8</sup>

Elderly patients tend to be reluctant to report pain-related symptoms. This reluctance may be due to the belief that pain is a necessary part of



older life, to fear of being negatively judged for having pain, or to the expectation that the clinician will give a low priority to pain, compared with other medical problems. Elderly patients may also fear that pain portends death or serious illness.<sup>9</sup>

Non-steroidal anti-inflammatory drugs (NSAIDs) make up one of the largest groups of pharmaceutical agents used worldwide.<sup>10</sup> At present, more than 20 different agents have been approved by the Food and Drug Administration (FDA) and are available to the primary care physician.

The high frequency of NSAID use in the elderly population is due to the high prevalence of chronically painful conditions such as osteoarthritis. NSAIDs do not affect the natural history of osteoarthritis or rheumatoid arthritis and are not considered disease-modifying drugs; they are used for symptomatic management only.<sup>11</sup>

Considering these factors mentioned above, the study was conducted to find the prescribing pattern of NSAIDs and use of PPIs along with NSAIDs among elderly out patients.

## METHODS

The study was conducted at bedded tertiary care hospital equipped with modern diagnostic and treatment facilities.

The data for the present study were collected from the patients who are attending the outpatient departments

### Inclusion Criteria

- Both male and female patients above the age of 60 years were included for the study.
- Patients above the age of 60 years who attended Out-patient department and prescribed with NSAIDs and PPIs were included for the study.

### Exclusion Criteria

- The patient who might be prescribed with NSAIDs with or without PPIs during their OPD visit and if the patient who requires a hospital admission from the OPDs, those patients were excluded from the study.
- All elderly in-patients were excluded from the study.
- Patients not willing to comply with the study procedure.

### Methods of Data Collection

Patient data were collected from the case reports, outpatient cards and laboratory reports from outpatient departments. The data collected include:

- NSAIDs prescribed for the patients.
- Clinical indication for prescribing NSAIDs to the patients.
- PPIs co-prescribed with NSAIDs to the patients.
- Any adverse reaction due to NSAIDs.
- Demographic details of the patients prescribed with NSAIDs

### Evaluation of Data

Computer software was used for the analysis of the data and Microsoft word and Excel was used to generation of graphs, tables etc.



## RESULTS

Among 106 patients prescribed with NSAIDs, maximum number of patients [23(21.7%)] were prescribed with NSAIDs for the treatment of myalgia/ polyalgia followed by 21(19.8%) patients for osteoarthritis (OA) and 13(12.3%) for the treatment of patients with accident/ injury. A total number of 78 elderly patients were prescribed with NSAIDs in the Orthopedic OPDs during the study period. Among these 78 patients, maximum number of patients

[29(37.2%)] were prescribed with etodolac, followed by aceclofenac [21(26.9%) patients] and etoricoxib for 10(12.8%) patients.

A total number of 28 elderly patients were prescribed with NSAIDs in the Medicine OPDs during the study period. Among these 28 patients, maximum number of patients [8(28.6%)] were prescribed with aceclofenac followed by 7(25%) patients each with diclofenac sodium and ibuprofen and 6(21.4%) with etodolac.

**Table 1: Details of NSAIDs prescribed among study population**

NSAIDS	Orthopedic OPD		Medicine OPD		Total	
	No of patients	Percentage (%)	No of patients	Percentage (%)	No of patients	Overall Percentage (%)
Etoricoxib	10	12.8	0	0	10	9.4
Etodolac	29	37.2	6	21.4	35	33
Aceclofenac	21	26.9	8	28.6	29	27.4
Ibuprofen	9	11.5	7	25	16	15.1
Diclofenac Sodium	3	3.9	7	25	10	9.4
Lornoxicam	3	3.9	0	0	3	2.8
Nimesulide	3	3.9	0	0	3	2.8
<b>Total (N)</b>	<b>78</b>	<b>100</b>	<b>28</b>	<b>100</b>	<b>106</b>	<b>100</b>

The above results revealed that etodolac was the drug of choice in the Orthopedic OPDs and aceclofenac was the drug of choice in Medicine OPDs. Overall analysis of the usage of NSAIDs among the study population in both Orthopedic and Medicine OPDs revealed that, out of 106 patients who were prescribed with NSAIDs during the study period, etodolac was used in 35(33.0%) patients followed by aceclofenac in 29(27.4%) patients and

etoricoxib in 10(9.4%) patients, indicating the preference of etodolac over other NSAIDs. This could be because of lower GI toxicity of etodolac compared to other NSAIDs.

Among these 78 patients, maximum number of patients [21(26.9%)] were prescribed with NSAIDs for the treatment of OA followed by 13(16.7%) patients for the treatment of patients with accident/ injury and 10(12.8%)



patients for the treatment of spondylosis (Figure -1).

Among 21 patients who were prescribed NSAIDs for osteoarthritis, etodolac was the drugs of choice, having been prescribed in 10(47.6%) patients. Among 13 patients who

were prescribed NSAIDs for accident/ injury, aceclofenac was the drug of choice having been prescribed in 6(46.2%) patients. Among the patients who were prescribed NSAIDs for spondylosis, ibuprofen was the drug of choice, having been prescribed in 3 (30%) patients.

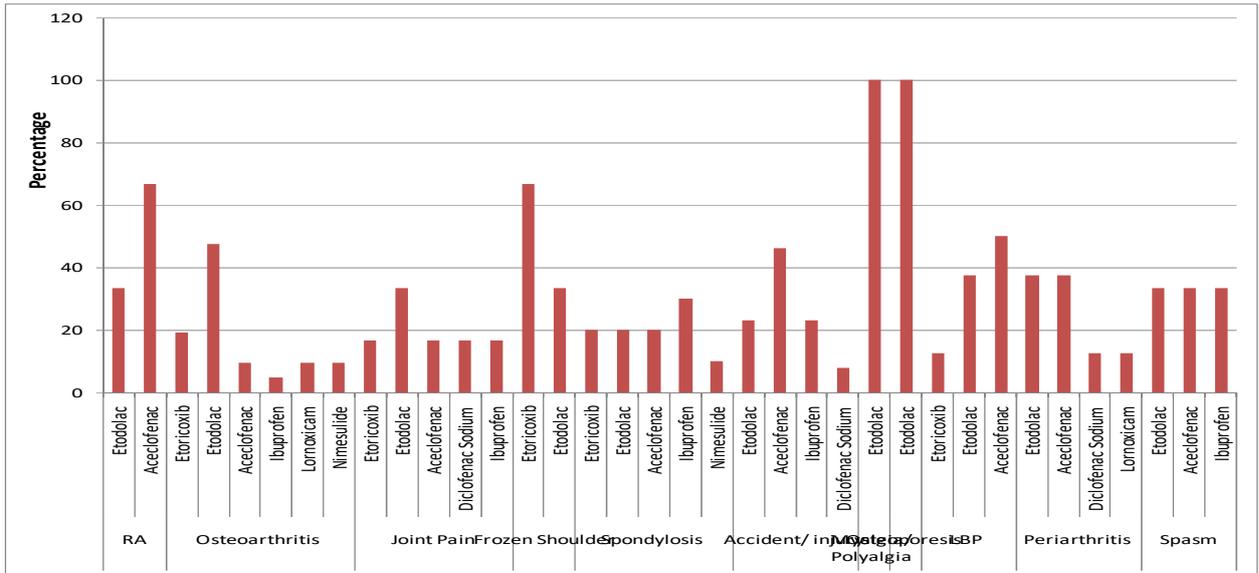


Fig. 1: NSAIDs prescribed for different current indications among study population Orthopedic OPD

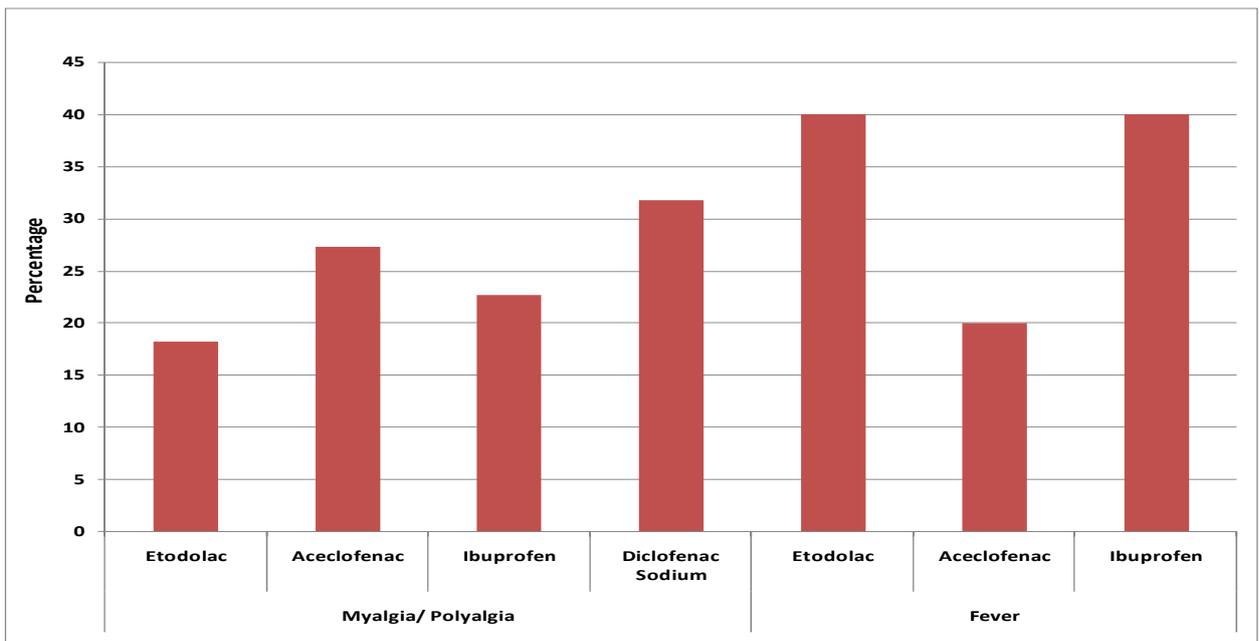


Figure 2: NSAIDs prescribed for different current indications among study population Medicine OPD



Analysis of the indication for the prescribing of NSAIDs in the Medicine OPDs is shown in (Figure -2). Data revealed that a total number of 28 elderly patients were prescribed with NSAIDs in the Medicine OPDs during the study period. Among these 28 patients, maximum number of patients [22(78.5%)] were prescribed with NSAIDs for the treatment of myalgia/ polyalgia followed by 5(17.9%) patients for the treatment of fever and 1(3.6%) patient for the treatment of spasm. Among 22 patients who were prescribed with NSAIDs for the treatment of myalgia/ polyalgia, diclofenac sodium was the drug of choice, having been prescribed in 7(31.8%) patients. Among 5 patients who were prescribed NSAIDs for fever, etodolac and ibuprofen were the drugs of choice having been prescribed in 2(40%) patients each.

Analysis of the data obtained during the study period revealed that, out of 106 patients prescribed with NSAIDs, 53(50%) patients were prescribed with NSAIDs in combination with GPDs and an equal number [53(50%)] of patients were prescribed with NSAIDs alone without any GPDs.

Out of 53 patients who were co-prescribed with NSAIDs and GPDs, 34(64.2%) patients were prescribed with H2 receptor blockers and 19(35.8%) were with PPIs. Pantoprazole and omeprazole were the only PPIs used co-prescribed with NSAIDs during the study period. Out of these two PPIs, pantoprazole

was observed to be the drug of choice having been prescribed in 15(28.3%) patients. Ranitidine was the only H2 receptor blocker used during the study period

The results revealed that among the 53 patients prescribed with different NSAIDs, 24(45.3%) patients prescribed with etodolac were not co-prescribed with any of the GPDs followed by aceclofenac [11(20.8%) patients] and ibuprofen [8(15.1%) patients]. As mentioned earlier, the reason for prescribing etodolac alone could be because of its low GI toxicity.

### CONCLUSION

In the present study, the choice of NSAIDs was found to be in line with the safety profile of the NSAIDs where, the use of safer drugs like etodolac (33%) and aceclofenac (27.4%) was observed to be more. However, there is a scope for increase in the use of etoricoxib, a COX 2 inhibitor, which was used in only 9.4% of the patients. Although, PPIs are better GPDs compared to the H2 receptor blocker in reducing the GI toxicity, their usage was only in 19 (17.9%) patients; 34 (32.1%) patients were co-prescribed with H2 receptor blocker. 50% of the patients were not co-prescribed with any of the GPDs.

In this study, the safety profile of the NSAIDs has been given due consideration while choosing the NSAIDs for the elderly. But, the co-prescribing of PPIs along with NSAIDs was observed to be far less than the required extent.



NSAIDs are the some of the most commonly prescribed drugs and are also available as Over The Counter (OTC). Approximately 40-60% people who use NSAIDs are 60 years of age and over. NSAIDs associated gastric and duodenal ulceration occurs approximately 20% of the patients. One of the important risk factors for NSAIDs induced GI complication is that old age. Studies evaluating different strategies to prevent NSAID induced gastric ulcers have highlighted the importance of use of GPDs in patients treated with NSAIDs.

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