

PRESCRIBING PATTERN OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS IN OUT PATIENTS OF ORTHOPEDIC DEPARTMENTS OF SECONDARY AND TERTIARY HEALTH CARE SETTINGSK. B. Sanalkumar¹, K. T. Shenoy², K. Arun³, Leena K. B⁴, K. M. Hema Ilavarasi⁵**HOW TO CITE THIS ARTICLE:**

K. B. Sanalkumar, K. T. Shenoy, K. Arun, Leena K. B, K. M. Hema Ilavarasi. "Prescribing Pattern of Non-Steroidal Anti-Inflammatory Drugs In Out Patients of Orthopedic Departments of Secondary and Tertiary Health Care Settings". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 68, August 24; Page: 11824-11833, DOI: 10.14260/jemds/2015/1705

ABSTRACT: BACKGROUND: Non-steroidal anti-inflammatory drugs (NSAIDs) make up one of the largest groups of pharmaceutical agents used worldwide. Though NSAIDs are beneficial, they are not without adverse reactions, of which, gastrointestinal toxicity is the most relevant. Hence cautious and rational use of this group of drug is indicated to avoid a major catastrophe. This study has been designed to evaluate the use of NSAIDs and the profile of their utilization. **OBJECTIVES:** 1. To Study the Pattern of NSAIDs prescription in the secondary and tertiary health centers. 2. To Study the proportions having Co-prescription with gastro protective agents. **METHODOLOGY:** A cross sectional study done in orthopedic outpatient departments of tertiary and secondary health centers of Thiruvananthapuram which includes totally 769 patients. Study was conducted from June 1st to September 30, 2006 after ethical clearance from the ethical committee, Government Medical College, Thiruvananthapuram. **RESULTS:** 769 patients were studied from three health care facilities in Thiruvananthapuram District. Diclofenac was the most commonly used drug in the District Hospital and Medical College Hospital (MCH), 62% and 46.6% respectively; whereas Ibuprofen was the most commonly used drug in Taluk hospital (45.9%). In General hospital, 247 cases received NSAID out of which 95 cases only received gastro protective agents, the lowest % among the three centers. Out of 262 cases in the MCH 249 cases received NSAIDs. Among 249 cases only 193 cases received gastro protective agents that is about 77.5%. Out of 257 cases in the Taluk Hospital 256 cases received NSAIDs and among 256 cases 248 cases received gastro protective agents, about 96.8%, highest % of gastro protective agents. Conclusion: Diclofenac was the most commonly used drug in the District Hospital and Medical College Hospital, 62% and 46.6% respectively; whereas Ibuprofen was the most commonly used drug in Taluk hospital (45.9%). Ranitidine was the most commonly used gastro protective agent, out of 536 cases received GPA, 404 cases was prescribed with ranitidine (75.37%), second most common GPA was pantoprazole, 102 out of 536 (19.02%) and this discrepancy in gastro protective agents prescription along with NSAIDs is due to the availability of drugs in that centre.

KEYWORDS: NSAID, Prescribing Pattern.

INTRODUCTION: Worldwide, NSAIDs are prescribed more frequently than any other group of medicines.¹ The need for promoting appropriate use of drugs in the health care system is not only because of the economic considerations but it is also one essential element for achieving quality of health and medical care for patients and the community. A large percentage of the health budget - approximately 35% of the country is spent on medicines, in which about 50 percent or more of drug expenditures may be wasted through irrational prescribing, dispensing, and various other forms of inappropriate prescribing.²

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This often remain unnoticed by those who are involved in health sector decision-making or delivery of health services, which usually comes to the attention of health decision-makers or managers when there is an acute shortage of budget for health and action for cost efficiency is required.³

Though NSAIDs are beneficial, they are not without adverse reactions, of which, gastrointestinal toxicity is the most relevant.⁴ The need of NSAIDs without gastrointestinal toxicity has been recently fulfilled with availability of COX-2 selective NSAIDs.⁵ Hence cautious and rational use of this group of drug is indicated to avoid a major catastrophe. This study has been designed to evaluate the use of NSAIDs and the profile of their utilization.

BACKGROUND: Non-steroidal anti-inflammatory drugs (NSAIDs) make up one of the largest groups of pharmaceutical agents used worldwide. In the past, NSAIDs are used by 20% or more of the population. NSAIDs are also one of the most common causes of adverse drug reactions (ADRs) reported to drug regulatory agencies as well as in many clinical and epidemiological studies.¹ The most common ADRs are those pertaining to gastrointestinal (GI) system, notably dyspepsia and bleeding.⁶ The risk of GI complications varies widely among individual NSAIDs and so does the cost. Since there are no important differences among these drugs with regard to efficacy, the choice of first line treatment should be based on their relative toxicity. Quality of life can be improved by enhancing the standard of medical treatment at all levels of the health care delivery system through medical audit.

The study of prescribing pattern helps to categorize patient characteristics in those receiving NSAID as high and low risks groups, monitor, evaluate and if necessary suggest modifications in the prescribing practices of medical practitioners, so as to make medical care rational and cost effective. Realizing the enormous potential of drug utilization studies, in promotion of rational drug therapy, World Health Organization has formulated certain guidelines for evaluation of drug use indicators. According to WHO drug utilization study should be done in every teaching hospital for each drug category to rationalize the prescriptions².

METHODOLOGY: RATIONALE FOR STUDY: The study of prescribing pattern helps to monitor, evaluate and if necessary suggest modifications in the prescribing practices of medical practitioners, so as to make medical care rational and cost effective.

OBJECTIVES:

1. To Study the Pattern of NSAIDs prescription in the secondary and tertiary health centers.
2. To Study the proportions having Co-prescription with gastro protective agents.

MATERIALS AND METHODS: Setting: Tertiary Health care facility-1. (Medical College Hospital, Thiruvananthapuram) Secondary Health care facilities 2. (District Hospital, Thiruvananthapuram and Taluk Hospital, Chirayinkil).

Design: Cross-sectional Study.

Study Period: June 1st to September 30, 2006.

Source Population: Trivandrum district and adjoining District. Daily out-patient turn-over of 80-120 patients.

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Sample Size: Sample size was calculated based on proportions of expected NSAID Usage as 80% and with a precision of 5% and confidence level (1-alpha) as 95 % by using the software designed and developed by Biostatistics Resources and training center, Christian Medical College, Vellore. The sample size needed was 246. However, we included 262 cases from Medical College Hospital, Thiruvananthapuram and 250 cases from District Hospital, Thiruvananthapuram and 257 cases from Taluk Hospital, Chirayinkil and hence a total of 769 cases; 752 cases received NSAIDs.

Inclusion Criteria: Patient above the age of 18 years receiving NSAIDs for any disease indication were included in the study.

Exclusion Criteria:

1. Those who are not willing to participate in the study.
2. Patients below 18 years.

Ethical Clearance: Obtained from the Ethical committee, Medical College, Trivandrum.

RESULTS:

Name of Facilities	District Hospital, TVM	MCH, TVM	Taluk Hospital, Chirayinkil	Total
Number of Patients	250(32.50%)	262(34.08%)	257(33.42%)	769(100%)
Age Mean \pm SD	44.01 \pm 13.08	42.55 \pm 14.09	44 \pm 13.06	-

Table 1: Characteristics of the Study Population by Facility

The ages were comparable in three different health care settings.

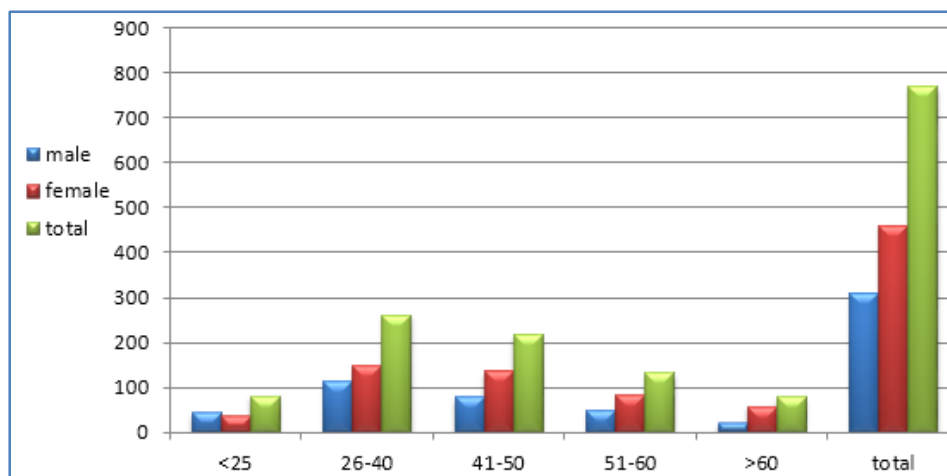


Fig. 1: Age and Sex Distribution

There were 308 males and 461 females; age ranged from 18-85 years among males and 18-89 among females.

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Name of Analgesic	District Hospital			MCH			Taluk Hospital		
	No	%	95% C.I	No	%	95% C.I	No	%	95% C.I
Aceclofenac	21	8.4	5.3-12.6	85	32.4	26.8-38.5	27	10.5	7.0-4.9
Diclofenac	155	62.0	55.7-68.0	122	46.6	40.4-52.8	39	15.2	11.0-20.2
Ibuprofen	12	4.8	2.5-8.2	8	3.1	1.3-5.9	118	45.9	39.7-52.2
Paracetamol	23	9.2	5.9-13.5	6	2.3	0.8-4.9	13	5.1	2.7-8.5
Indomethacin	19	7.6	4.6-11.6	8	3.1	1.3-5.9	2	0.8	0.1-2.8
Serratiopeptidase	0	0.0	0.0-1.5	9	3.4	1.6-6.4	0	0.0	0.0-1.4
Tramadol	1	0.4	0.0-2.2	0	0.0	0.0-1.4	0	0.0	0.0-1.4
Mefenamic acid	0	0.0	0.0-1.5	1	0.4	0.0-2.1	0	0.0	0.0-1.4
Etoricoxib	9	3.6	1.7-6.7	0	0.0	0.0-1.4	8	3.1	1.4-6.0
Meloxicam	0	0.0	0.0-1.5	6	2.3	0.8-4.9	0	0.0	0.0-1.4
Piroxicam	7	2.8	1.1-5.7	4	1.5	0.4-3.9	0	0.0	0.0-1.4
Nimesulide	0	0.0	0.0-1.5	0	0.0	0.0-1.4	37	14.4	10.3-19.3
Aspirin	0	0.0	0.0-1.5	0	0.0	0.0-1.4	12	4.7	2.4-8.0
Nil	3	1.2	0.2-3.5	13	5.0	2.7-8.3	1	0.4	0.0-2.1
Total	250	100		262	100		257	100	

Table 2: Pattern of Analgesic use in Different Health care setting

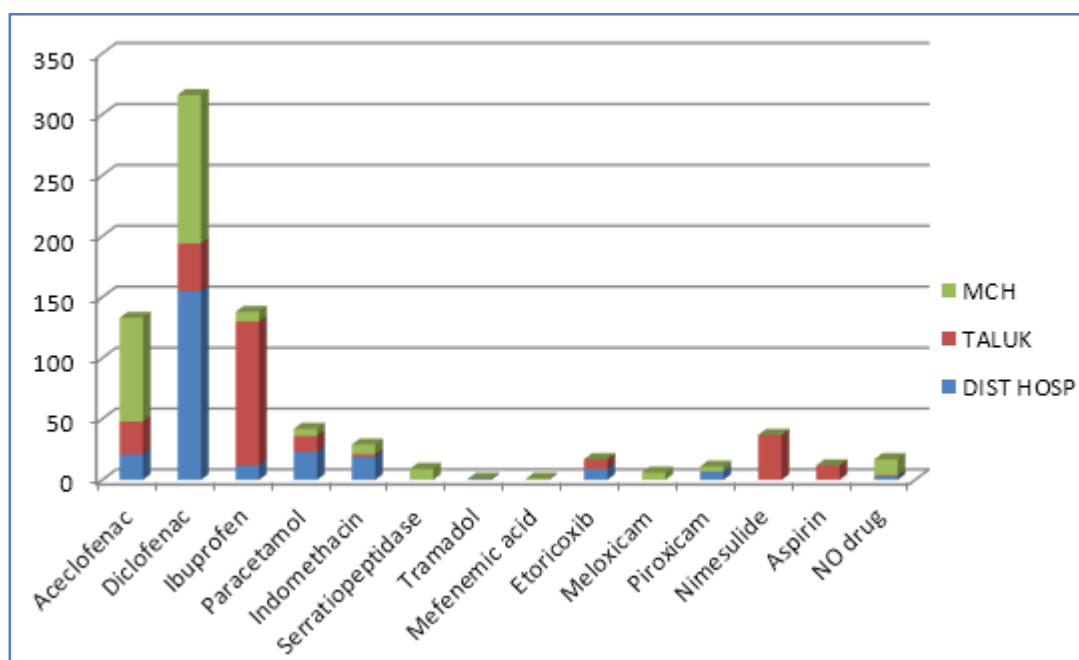


Fig. 2: Pattern of Analgesic Use in Different Health Care Setting

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Name of Analgesic	Facility_Wise			No. in Total
	District No.	MCH No.	Taluk No.	
Aceclofenac	21	85	27	133
Diclofenac	155	122	39	316
Ibuprofen	12	8	118	138
Paracetamol	23	6	13	42
Indomethacin	19	8	2	29
Serratiopeptidase	0	9	0	9
Tramadol	1	0	0	1
Mefenamic acid	0	1	0	1
Etoricoxib	9	0	8	17
Meloxicam	0	6	0	6
Piroxicam	7	4	0	11
Nimesulide	0	0	37	37
Aspirin	0	0	12	12
No Drug	3	13	1	17
Total	250	262	257	769

Table 3: Gives the pattern of NSAIDS facility wise and in Total

752 of 769 cases received any of the NSAIDS. Diclofenac (316) was the most commonly prescribed agent.

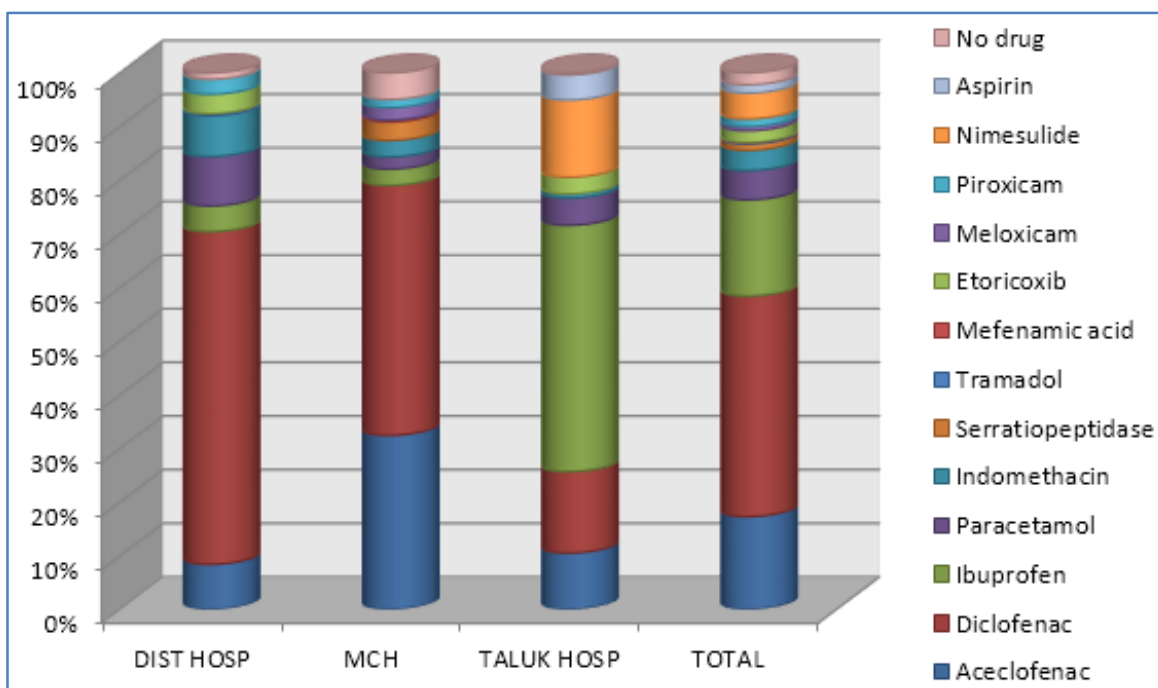


Fig. 3: Gives the Pattern of NSAIDS Facility Wise and in Total

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Diclofenac was the most commonly used drug in the District Hospital and Medical College Hospital, 62% and 46.6% respectively; whereas Ibuprofen was the most commonly used drug in Taluk hospital (45.9%). Second most commonly used analgesic was Aceclofenac in both GH and MCH whereas it was Diclofenac in the Taluk Hospital.

Analgesic Drugs	District	MCH	Taluk
Aceclofenac			
Male %	7.1	33.8	12.1
Female %	9	31	9.7
Diclofenac			
Male %	66.7	47.4	26.4
Female %	59.6	45.7	9.1
Ibuprofen			
Male %	2.4	2.3	39.6
Female %	6	3.9	49.7
Paracetamol			
Male %	11.9	2.3	2.2
Female %	7.8	2.3	6.7

Table 4: Pattern of analgesic use by facility and gender

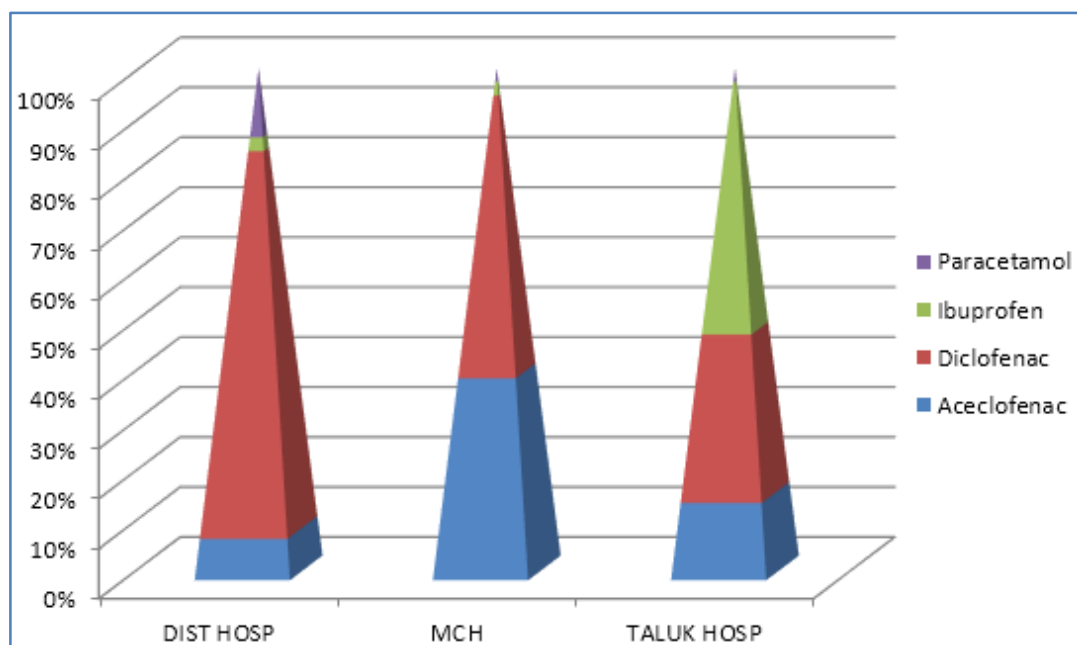


Fig. 4: Pattern of analgesic use by facility in males

Aceclofenac and Diclofenac were used more in males than females in all health facilities, whereas Ibuprofen was used more in females in all facility. Use of Paracetamol is more in male patients of GH, but in MCH both female and male were prescribed equally, where as in Talukhospital, Paracetamol was prescribed more for females than males.

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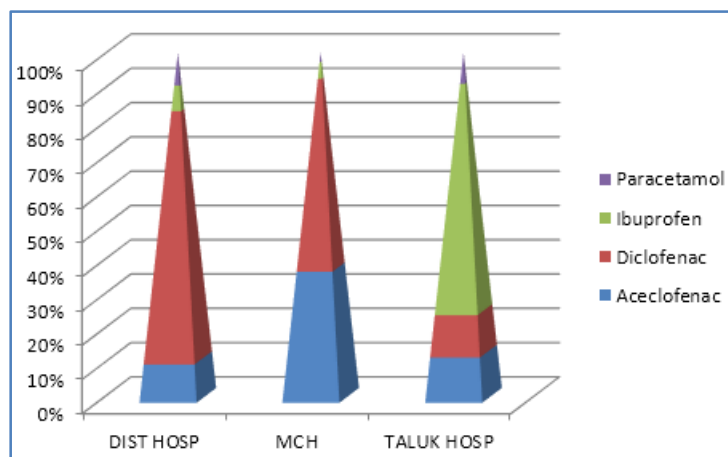


Fig. 5: Pattern of analgesic use by facility in females

Analgesic	Ranitidine	Famotidine	Omeprazole	Pantoprazole	Rabeprazole	Antacid	Total
Aceclofenac	50	2	1	57	0	2	112
Diclofenac	146	4	7	32	2	3	194
Ibuprofen	121	0	0	1	0	0	122
Paracetamol	16	0	0	1	0	0	17
Indomethacin	13	2	0	6	1	0	22
Serratiopeptidase	2	0	0	2	0	0	4
Mefenamic acid	0	0	0	0	1	0	1
Etoricoxib	8	0	0	1	0	0	9
Meloxicam	0	3	1	1	0	0	5
Piroxicam	0	1	0	1	0	0	2
Nimesulide	36	0	0	0	0	0	36
Aspirin	12	0	0	0	0	0	12
Total	404	12	9	102	4	5	536

Table 5: Pattern of Analgesic and Gastro protective agent Use in the facilities

Ranitidine was the most commonly used Gastro protective agent, out of 536 cases received GPA, 404 cases was prescribed with ranitidine (75. 37%), second most common GPA was pantoprazole, 102 out of 536 (19. 02%).

Drug	Facility Wise			Total N=769
	District N=250	Mch N=262	Taluk N=257	
Ranitidine	91	75	238	404
Famotidine	0	12	0	12
Omeprazole	1	6	2	9
Pantoprazole	0	96	6	102
Rabeprazole	0	4	0	4
Antacid	3	0	2	5
Total	95	193	248	536

Table 6: Pattern of Gastro protective agents use by facilities

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256 of 257 cases in the Taluk Hospital received NSAIDs and among 256 cases 248 cases received gastro protective agents (96.8%), highest % of gastro protective use was in Taluk Hospital. 247 of 250 cases in the General Hospital received NSAID and among the 247 cases 95 cases only received gastro protective agents (38%). This is the lowest percentage among the three centers. 249 of 262 cases in the MCH received NSAID and among 249 cases 193 cases received gastro protective agents (77.5%).

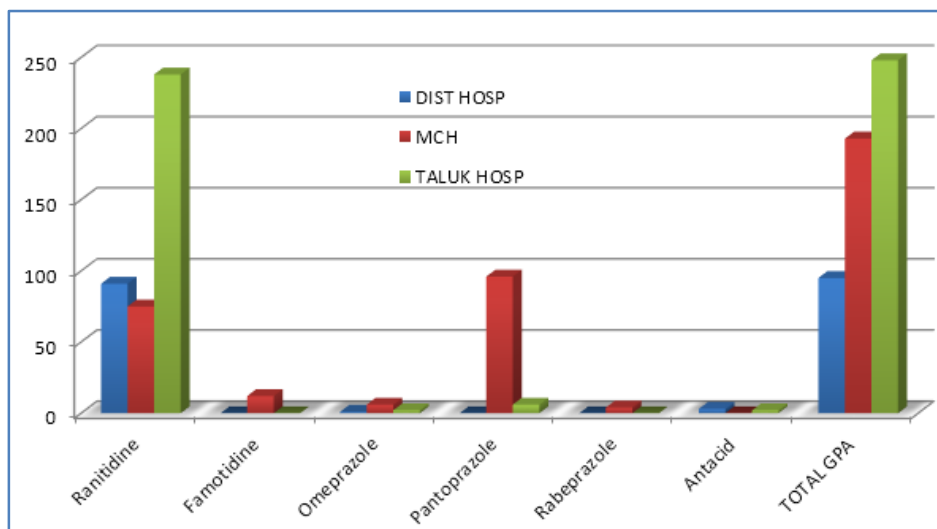


Fig. 6: Pattern of Gastro protective agents use by facilities

	DISTRICT	MCH	TALUK	Total
	N=250	N=262	N=257	N=769
Total No. with NSAID	247	249	256	752
Total No. of NSAID with GPA	95	193	248	536
% case of NSAID with GPA	38	77.5	96.8	71
% case of NSAID without GPA	62	22.5	3.2	29

Table 7: Pattern of Gastro-protective agents (GPA) used along with NSAIDs in different Facilities

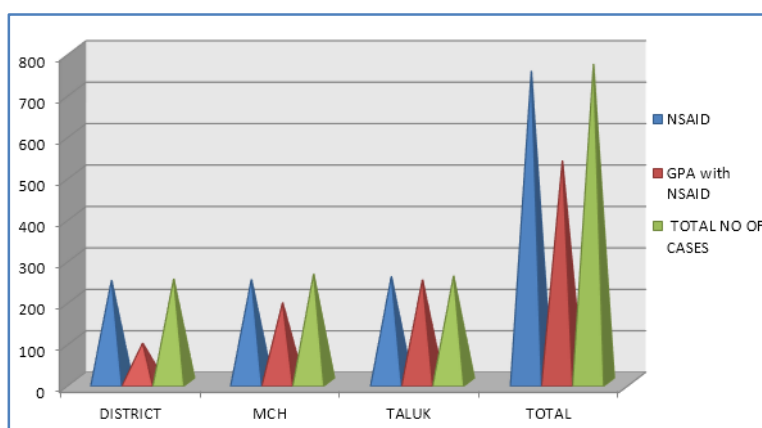


Fig. 7: Pattern of Gastro-protective agents (GPA) used along with NSAIDs in different Facilities

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DISCUSSION: 769 patients were studied from three health facilities in Thiruvananthapuram District. Data collected analysis were done separately. Total 262 patient's data were collected from Orthopedic out patients Department of Medical College Thiruvananthapuram. Among the 262 patients, 50.8% were males and 49.2% were females. But patterns were totally different in both General Hospital, Thiruvananthapuram and Taluk Hospital, Chirayinkil, where female patients seeking health care were high. In General Hospital, out of 250 patients only 33.6% were males and 66.4% were females. In Taluk Hospital out of 257 patients 35.4% were males and 66.4% were females.

Mean ages were comparable in three different health care settings. Educational level, more people with illiterate and just illiterate were present at Taluk hospital than medical college and general hospital. Alcoholic habits were almost same in three different settings.

More fracture cases were seen at medical college hospital than other setting, whereas more cases of minor non-traumatic pain and low backache were seen at general hospital and Taluk hospital. Diseases like hypertension and diabetes were more seen in general hospital than medical college and Taluk hospital.

About pattern of analgesic drugs used in different health care settings Diclofenac was the most commonly used drug in the General hospital and Medical College Hospital, about 62% in GH and 46.6% in MCH whereas Ibuprofen was the most commonly used drug in Taluk hospital about 45.9%. Second most commonly used analgesic was Aceclofenac in both GH and MCH whereas Diclofenac was in the Taluk Hospital.

Out of 257 cases in the Taluk Hospital 256 cases received NSAIDs and among 256 cases 248 cases received gastroprotective agents, about 96.8%, highest % of gastroprotective use was in Taluk Hospital. . Out of 250 cases in the GH 247 cases received NSAID and among the 247 cases, 95 cases only received gastro protective agents. This the lowest percentage among the three centers. Out of 262 cases in the MCH, 249 cases received NSAIDs. Among 249 cases only 193 cases received gastro protective agents that is about 77.5%.

All the three health care settings are government hospitals and so the physicians are forced to write the available drugs in that centre which is the main reason for the discrepancy in the pattern of use of gastro protective agents along with NSAIDs. Now a days Proton Pump Inhibitors are the commonly prescribed gastro protective agents along with NSAIDs even though Prostaglandin Analogues is the definitive treatment.

CONCLUSION: Diclofenac was the most commonly used drug in the General hospital and Medical College Hospital, about 62% in GH and 46.6% in MCH whereas Ibuprofen was the most commonly used drug in Taluk hospital and about 45.9%. Second most commonly used analgesic was Aceclofenac in both GH and MCH whereas Diclofenac was in the Taluk Hospital.

Out of 250 cases in the GH 247 cases received NSAIDs and among the 247 cases 95 cases only received gastro protective agents. This the lowest percentage among the three centers.

Out of 262 cases in the MCH 249 cases received NSAIDs. Among 249 cases only 193 cases received gastro protective agents that is about 77.5%. Out of 257 cases in the Taluk Hospital 256 cases received NSAIDs and among 256 cases 248 cases received gastro protective agents, about 96.8%, highest % of gastro protective use was in Taluk Hospital.

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Date of Submission: 03/08/2015.
Date of Peer Review: 04/08/2015.
Date of Acceptance: 19/08/2015.
Date of Publishing: 21/08/2015.