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DRUG PRESCRIBING PATTERN OF MUSCULOSKELETAL DISORDER PATIENTS AT TERTIARY CARE TEACHING HOSPITAL IN MANDYA: A RECORD- BASED DESCRIPTIVE STUDY

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ABSTRACT

MUSCULOSKELTAL DISORDERS are major cause of morbidities and mortality particularly in patients at the extreme of age, and those with pre-existing joint disease or immune suppression. In India, musculoskeletal disorders are responsible for 1.71 billion people have musculoskeletal condition worldwide. Out of these 18-23% is due to osteoarthritis. Drug utilization research is the study of marketing, distribution, prescription and use of drug in a society with special emphasis on the resulting medical, social and economic consequences. Conducting periodic studies of pattern of drug use in a hospital setting is essential to critically analyse the current hospital drug policies and to make recommendations based on various guideline to improve upon the current drug usage pattern. **Objectives:** To evaluate the prescribing pattern given to patients admitted with musculoskeletal disorders in general medicine and orthopaedic department and to assess the rationality of these prescriptions given in our hospital using WHO core drug prescribing indicators. **Methods and Methodology:** It was a record based-descriptive study. The study period was about 6 months and the relevant data was collected from in patient records. **Result:** A total of 162 prescriptions were collected and analysed for demographic characteristics, disease proportion, and prescribing pattern. Males were more (56.79%) compared to females (43.20%). Majority patients belonged to the age group 46-60 years (34.56%). Our most common musculoskeletal disorder found in the study population were osteoarthritis with comorbidities (57.3%). 878 drugs were found in 162 cases among which NSAID'S was mostly given followed by anti- inflammatory. Aceclofenac+ serratiopetidase were most commonly prescribed NSAID'S. **Conclusion:** Most of the drugs prescribed were included in the WHO essential drug list, India 2021. It is the responsibility of the clinical pharmacist to perform the periodical drug utilization studies in order to know the drug prescribing pattern and also to know the prevalent disease condition at particular point of time.

KEYWORDS: NSAID's, Drug prescribing pattern, Musculoskeletal disorders.

INTRODUCTION

To determine prescribing patterns among the patients who are admitted under the condition of musculoskeletal disorder were to avoid the overlapping(duplication) of drugs and minimize the long-term use of pain medications like NSAIDs. etc., which may more greatly impact on liver enzymes, renal functions and to achieve the rationality of drugs prescribed.

Medications such as non-Steroidal anti-Inflammatories Drugs (NSAIDs) may be used to treat inflammation or pain. NSAIDs are some of the most common pain relievers available. They include over-the-counter medications such as aspirin and ibuprofen, but they are also available in prescription strength. NSAIDs not only relieve pain, but they reduce inflammation, lower fevers, and prevent blood from clotting. Other treatment includes muscle strengthening exercises and stretches, physical or occupational therapy, acupuncture, and therapeutic massage. In severe cases, the patient was prescribed to take a replacement therapy like hip, or knee.

Musculoskeletal Disorders (MSDs) are injuries and disorders that affect the human body's movement or musculoskeletal system including muscles, tendons,

ligaments, nerves, discs, blood vessels, etc.

Common MSDs include carpal tunnel syndrome, tendonitis, muscle/tendon strain, ligament sprain, tension neck syndrome, thoracic outlet compression, rotator cuff tendonitis, epicondylitis, radial tunnel syndrome, digital neuritis, trigger finger / thumb, mechanical back syndrome, degenerative disc disease, ruptured / herniated disc, and many more. MSDs are common and risk of developing them increases with age. The severity of MSDs can vary. In some cases, they cause pain and discomfort that interferes with daily activities. Early diagnosis and treatment may help ease symptoms and improve long-term outlook.

Over the past two decades, nonsteroidal anti-inflammatory drugs (NSAIDs) have played a central role in these indications. Both males and females are equally affected by this disease till the age of 55 but later after this age, women are more seen to be the victim of Osteoarthritis. Many health practitioners have recognized that obesity may be the main reason behind these diseases.

MATERIALS AND METHOD

Study type: A Record based- descriptive study.
Study place: This study was conducted at medical record room, MIMS, Mandya.
Study period: This study was conducted for a period of 6 months (2017-2022). 4 months of data collection and 2 months of data analysis and -write up.

Sample size: 162
Sample method: Convenience sampling.

Inclusion criteria
Patients admitted to the orthopaedic and general medicine department with a diagnosis of musculoskeletal disorders.

Exclusion criteria
Fracture patients.
Pregnant and lactating women, patients less than 18 years.

RESULT AND DISCUSSION

This study was conducted in the record room of MIMS, Mandya. A total of 162 patients admitted in MIMS were enrolled in the study based on study criteria. The required details from the patient case sheet were recorded in a suitably designed patient profile form. The prescription data of 162 patients were analyzed in the current study.

Gender Distribution
A total of 162 patient's data were collected from the in-patient department of MIMS record room during a period of six months. Among the whole 162 patients under study including male and females, 92 patients were male (56.79%) and 70 patients were female (43.20%). This study showed that the prevalence of musculoskeletal disorder was more in males than in females.

Table 1: Gender Wise Distribution of Patients with Musculoskeletal Disorders.

Gender	No. of patients	Percentage
Male	92	56.79%
Female	70	43.20%

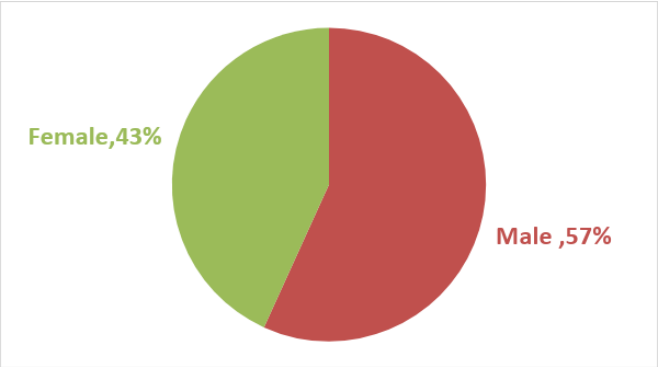

Figure 1: Distribution of patients with musculoskeletal disorder based on gender.

According to Patients Age

Table 2: Distribution of Patient with Musculoskeletal Disorder Based On Age.

Age	NUMBER OF PATIENTS	PERCENTAGE
18-30	20	12.34%
31-45	51	31.48%
46-60	56	34.56%
>60	35	21.60%

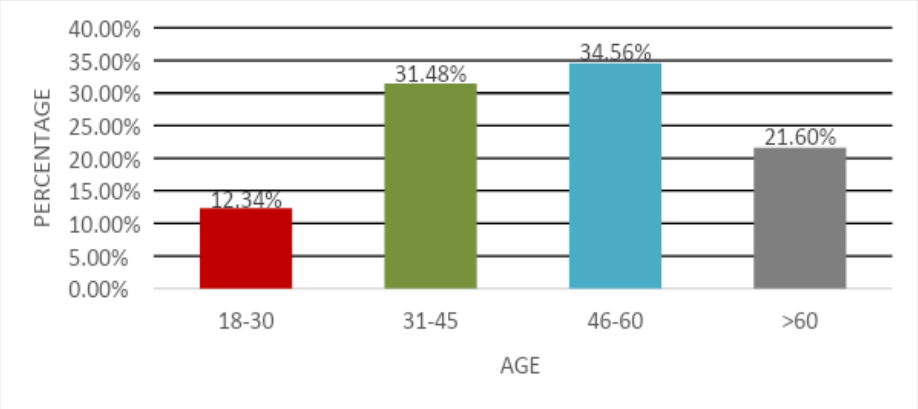

Figure 2: Age wise distribution of patients with musculoskeletal disorder.

In this study, we found that patients aged between 46-60 were more prone to musculoskeletal disease compared to other ages.

According to patients Social History

Table 3: Social History of Patients With Musculoskeletal Disorders.

Social History	No. of patients	Percentage
Smokers	41	25.30%
Non- Smokers	121	74.69%

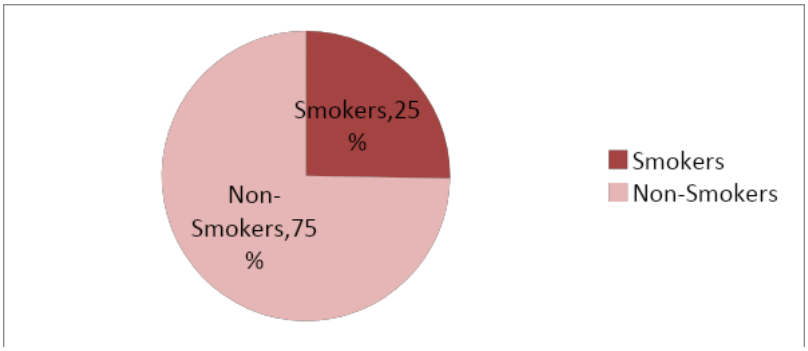

Fig 3: Percentage smokers and non-smokers in patients with Musculoskeletal disorder.

Out of 162 cases collected, it was found that 41 patients were smokers. Majority were found to be male patients aged between 25-45 years. 121 patients were non-smokers.

Types of Musculoskeletal Disorders

In this study, patients admitted in the in-patient department of Orthopaedic and general medicine department are distributed based on various types of Musculoskeletal Disorders.

Table 4: Types of Musculoskeletal Disorders Considered Under This Study.

Musculoskeletal disorder	No. of patients	Percentage
Osteoarthritis	30	18.51
Rheumatoid arthritis	29	17.90
Carpal tunnel	16	9.87
Tendinitis	11	6.79
others	6	3.70

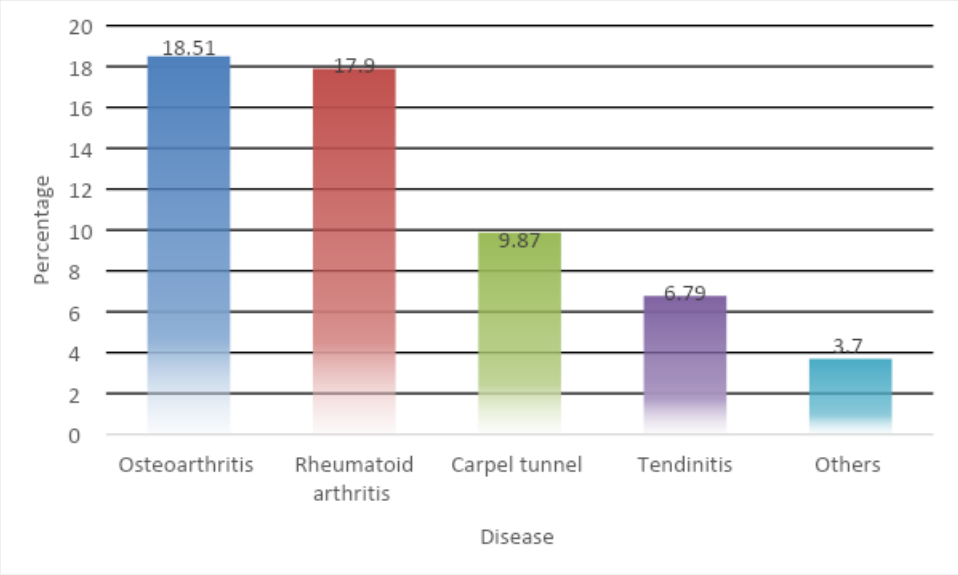

Figure 4: Distribution of types musculoskeletal disorders.

Out of 162 cases collected, patients were mostly affected with osteoarthritis (18.51%) followed by Rheumatoid arthritis (17.9%), followed by Carpal tunnel (9.87%) followed by tendinitis (6.79%) followed by others (3.7%). From this, we concluded that Osteoarthritis is more common as compared to other type of musculoskeletal disorder in our hospital.

Table 5: Patient with Musculoskeletal Disorder with on comorbidities.

Disease condition	No. of patients	Percentage
RA+HTN+DM	18	11.11%
RA+P+ COPD	12	7.40%
OA+HTN+DM	21	12.96%
OA+P+COPD	12	7.40%
TE+CT+OTHER	7	4.32%

In this part of study, we distributed patients with Musculoskeletal disorder based on comorbidities which mainly include hypertension, diabetes mellitus. chronic obstructive pulmonary disease, pneumonia and others (sepsis arthritis, polyarthralgia, baker's cysts, urinary tract, tuberculosis, ischemic heart disease).

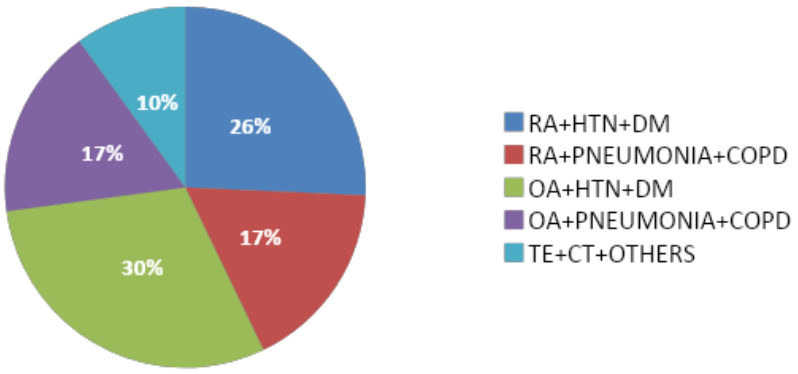

Fig 5: patients with MSDs with on co- morbidities.

Patient With Musculoskeletal Disorder with on comorbidities

From this study, we concluded that out of 162 cases, patients with musculoskeletal disorder mostly had comorbidities like Hypertension, diabetes mellitus, pneumonia and chronic obstructive pulmonary disorder.

6. DRUG PRESCRIBING PATTERN OF PATIENTS WITH MUSCULOSKELETAL DISORDER

Drug prescribing pattern of patients in musculoskeletal disorder along with their comorbidities are studied in the below section. This helps to study the prescribing pattern of NSAID'S and the supportive therapy provided to patients with different types of musculoskeletal disorder.

Table 6.1: Drug Prescribing pattern of Osteoarthritis.

Drugs		No Of Drugs Per Prescription	Total No. Of Drug Per Prescription	Percentage
NSAIDS	Diclofenac	17	63	92.64%
	Paracetamol	18		
	Tramadol	2		
	Aceclofenac+ serratiopetidase	26		
Anti- inflammatory drugs	Prednisolone	6	14	11.96%
	Methotrexate	8		
Supportive therapy	IVF	7	7	5.64%
Proteolytic enzyme	Chymoral forte	10	10	8.26%
Miscellaneous	Anti- gastric drugs	26	37	39.36%
	Anti – emetic drugs	3		
	Multivitamin	3		
	Calcium	5		

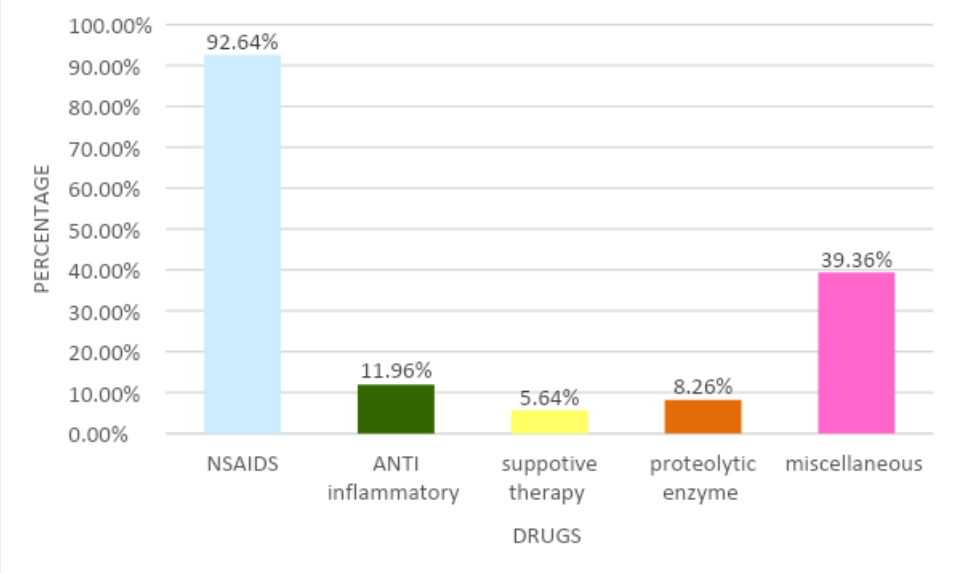

Fig 6: Drug prescribing pattern of Osteoarthritis.

Out of 30 single cases of Osteoarthritis NSAID'S (92.64%) were mostly prescribed drug among which NSAID'S was commonly given followed by Aceclofenac+ serratiopetidase. Supportive therapy includes IVF (5.64%) (Normal saline, dextrose normal saline), anti-inflammatory (11.96%) (methotrexate, prednisolone), proteolytic enzyme (chymoral forte), anti-emetics (ondansetron), Antacids (pantoprazole, ranitidine), vitamins (B complex).

Table 6.2: Drug prescribing pattern of Rheumatoid arthritis.

Drugs		No. of drug per prescription	Total no. of drug per prescription	Percentage
Antibiotics	Ceftriaxone	4	4	2.79%
DMARD'S	Prednisolone	6	28	23.52%
	Methotrexate	13		
	Hydroxychloroquine	9		
Supportive therapy	IVF NS	8	8	5.75%

Miscellaneous	Anti- emetic Calcium Multivitamin Anti-gastric	3 2 2 29	36	32.43%
Proteolytic enzyme	Chymoral forte	5	5	3.52%
NSAIDS	Diclofenac	23	66	81.48%
	Aceclofenac+ serratiopetidase	22		
	Tramadol	9		
	Paracetamol	12		

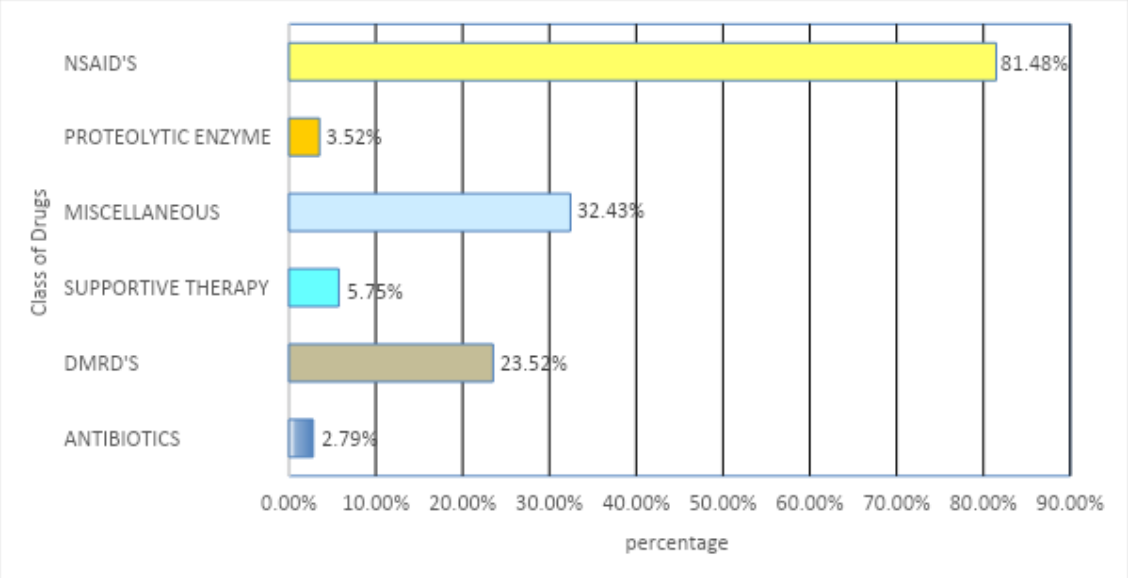

Fig 7: Drug prescribing pattern of rheumatoid arthritis.

Out of 29 single cases of Rheumatoid arthritis, NSAID'S (81.48%) were commonly prescribed among which Diclofenac was commonly given. DMARD'S (23.52%) were prescribed among which was methotrexate commonly given. Supportive therapy includes IVF (normal saline, dextrose normal saline). Proteolytic enzyme (chymoral forte). Miscellaneous includes antacid (pantoprazole, ranitidine), Antiemetic (ondansetron), calcium and vitamins.

Table 6.3: Drug prescribing pattern of Carpal tunnel.

Drugs		**No. of drug per prescription**	**Total no. of drug per prescription**	**Percentage**
Antibiotics	Ceftriaxone	3	3	4.91%
Anti- inflammatory	Prednisolone	2	11	20.75%
	Methotrexate	9		
Supportive therapy	IVF NS	3	3	4.91%
Miscellaneous	Multivitamin Anti-gastric	2 13	15	30.61%
Proteolytic enzyme	Chymoral forte	3	3	4.91%
NSAIDS	Diclofenac	12	29	82.85%
	Aceclofenac+ serratiopetidase	13		
	Tramadol	2		
	Paracetamol	2		

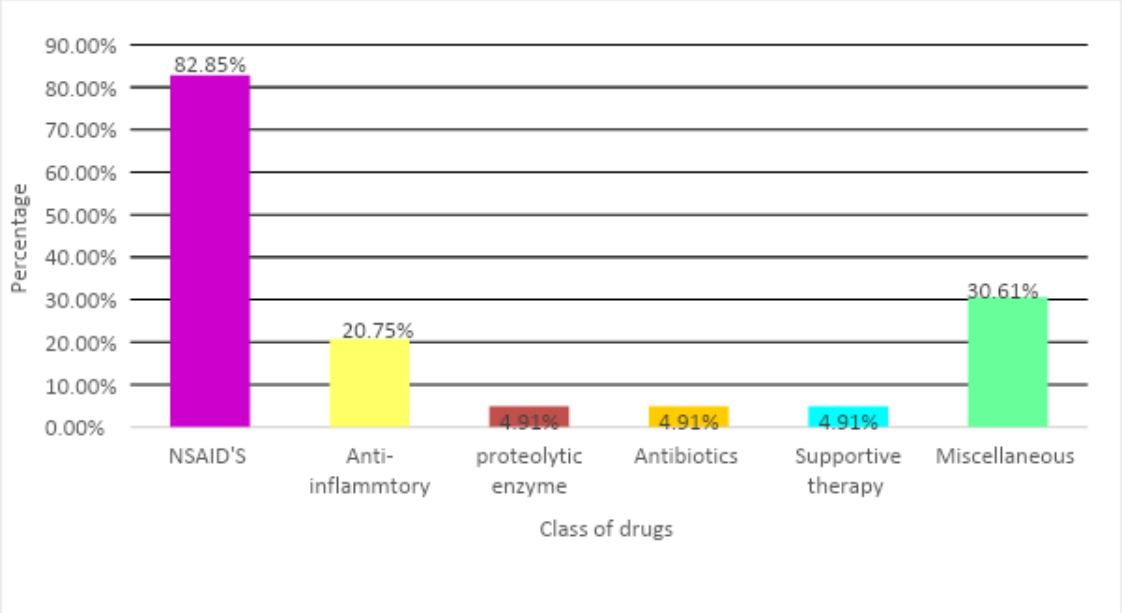

Fig 8: Drug Prescribing pattern of Carpal tunnel.

Out of 16 cases collected, NSAID'S (82.85%) were prescribed frequently for carpal tunnel along with anti-inflammatory (20.75%) and Proteolytic enzyme (4.91%). Miscellaneous includes anti- gastric, multivitamin.

Table 6.4: Drug Prescribing pattern of Tendinitis.

Drugs		No. of drug per prescription	Total no. of drug per prescription	Percentage
Antibiotics	Ceftriaxone	8	8	14.81%
Anti- inflammatory	Prednisolone	4	9	16.98%
	Methotrexate	5		
Anti-gastric drugs	Pantoprazole Ranitidine	6 5	11	21.56%
Proteolytic enzyme	Chymoral forte	4	4	6.89%
NSAIDS	Diclofenac	10	30	93.75%
	Aceclofenac+ serratiopetidase	9		
	Tramadol	6		
	Paracetamol	5		

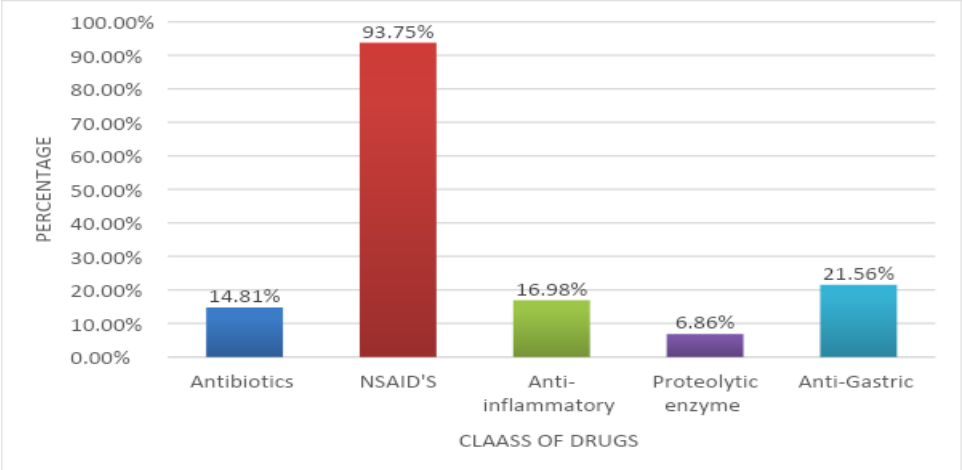

Fig 9: Drug Prescribing pattern of Tendinitis.

Out of 11 cases collected, NSAID'S along with antibiotics, proteolytic enzyme, Anti-inflammatory were prescribed for Tendinitis.

Table 6.5: Drug Prescribing pattern of RA with HTN with Type 2 DM.

Drugs	No. of drug per prescription	Percentage
NSAIDS	21	25%
ANTI HYPERTENSIVE	12	14.28%
ORAL HYPOGLYCEMIC	10	11.90%
ANTI GASTRIC	16	19.04%
ANTI INFLAMMATORY	13	15.47%
SUPPORTIVE THERAPY	4	4.76%
CARDIAC DRUGS	2	2.38%
OTHERS	7	8.33%

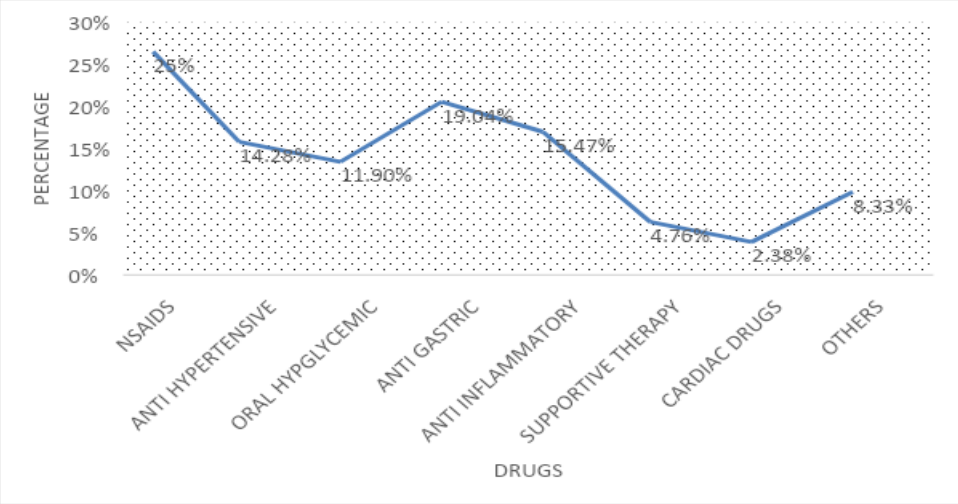

Fig 10: Drug prescribing pattern of RA with HTN with DM.

Out of 18 cases collected, NSAID'S (25%) anti-hypertensive drug (14.28%) and oral hypoglycaemic drugs (11.90%) were mostly prescribed for HTN and DM along with supportive therapy.

Table 6.6: Drug Prescribing pattern of RA with PNEUMONIA with COPD.

Drugs	No. of drug per prescription	Percentage
ANTIBIOTIC	10	13.51%
ANTI GASTRIC	10	13.51%
BRONCHODILATORS	8	10.81%
NSAIDS	24	32.43%
ANTI INFLAMMATORY	11	14.86%
SUPPORTIVE THERAPY	11	14.86%

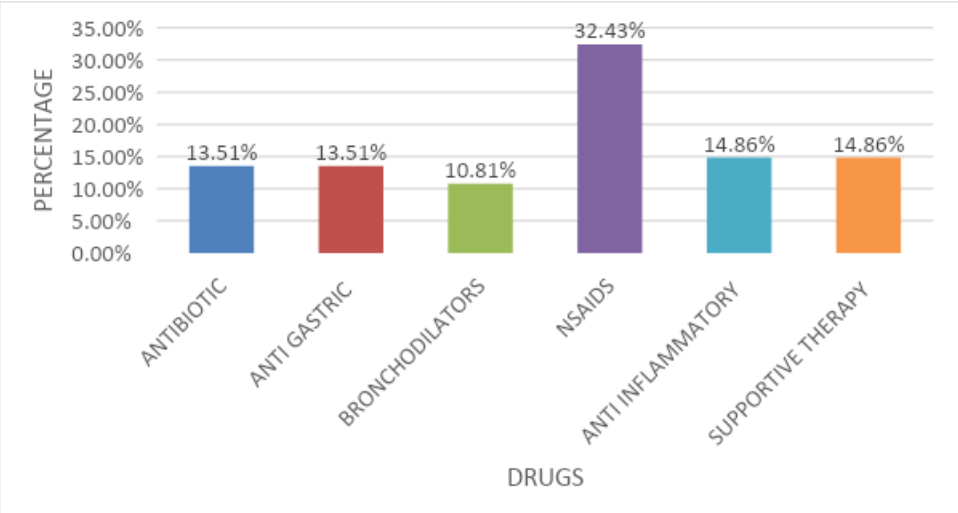

Fig 11: Drug prescribing pattern of RA with PNEUMONIA with COPD.

Out of 12 cases of rheumatoid arthritis followed by co-morbidities the drugs prescribed are NASID'S (32.43%), Antibiotics (13.51%) most commonly given drug is ceftriaxone, followed by cefotaxime. Bronchodilator (10.81%) and supportive therapy is followed on.

Table 6.7: Drug Prescribing pattern of OA with HTN with DM.

Drugs	No. of drug per prescription	Percentage
NSAIDS	42	36.20%
ANTI GASTRIC	18	15.51%
ANTI HYPERTENSIVE	15	12.93%
ORAL HYPOGLYCEMIC	12	10.34%
ANTI INFLAMMATORY	13	11.20%
SUPPORTIVE THERAPY	10	8.62%
CARDIAC DRUGS	1	0.86%
MISCELLANEOUS	5	4.31%

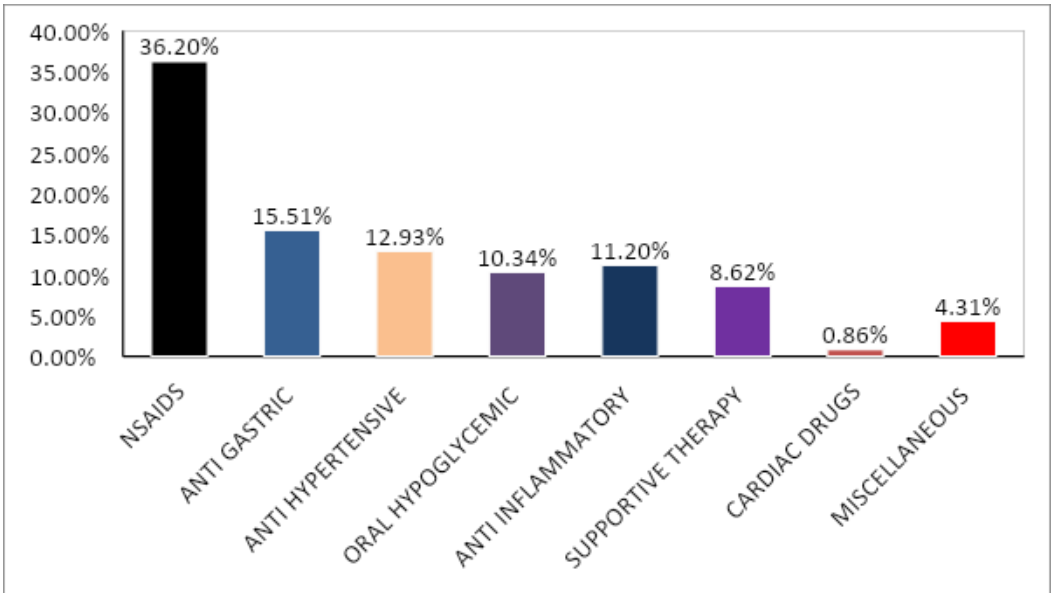

Fig 12: Drug prescribing pattern of OA with HTN with DM.

There were 21 cases of oosteoarthritis for which NAID'S (36.0%) were prescribed among which acelcofenac + serratiopeptidase was mostly common, followed by diclofenac, tramadol and diclofenac. Supportive therapy includes anti gastric (Ranitidine, pantoprazole), proteolytic enzyme (chymoral forte), oral hypoglycemic (metformin and cardiac drugs like Ecosprin AV.

Table 6.8: Drug prescribing pattern of OA with pneumonia with COPD.

Drugs	No. of drug per prescription	Percentage
NSAIDS	23	33.33%
ANTI GASTRIC	10	14.49%
BRONCHODILATORS	5	7.24%
SUPPORTIVE THERAPY	10	14.49%
ANTI INFLAMMATORY	8	11.59%
ANTIBIOTICS	11	15.94%
MISCELLANEOUS	2	2.89%

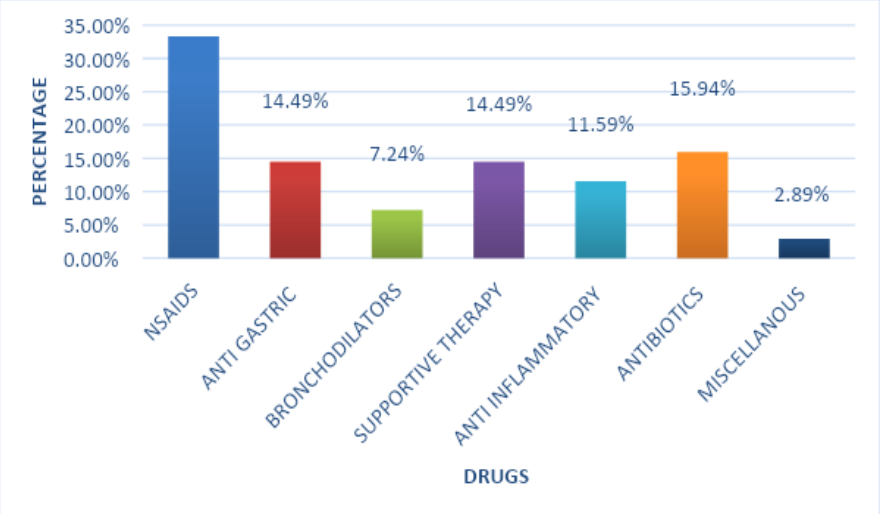

Fig 13: Drug prescribing pattern of OA with PNEUMONIA with COPD.

Out of 12 cases collected, antibiotics (15.94%) and NSAIDs (33.3%) were most frequently given. Ceftriaxone was most commonly given. Diclofenac and acelcofenac + serratiopeptidase were also given as adjuvant therapy. Supportive therapy includes bronchodilators (deriphylline), antacids, anti-emetics (ondansetron).

Table 6.9: Drug prescribing pattern of TENDINITIS, CARPEL TUNNEL with OTHERS.

Drugs	No. of drug per prescription	Percentage
NSAIDS	8	23.52%
ANTI GASTRIC	4	11.76%
BRONCHODILATORS	5	14.70%
HYPERTENSIVE DRUGS	4	11.76%
ORAL HYPOGLYCEMIC DRUGS	5	14.70%
ANTI INFLAMMATORY	3	8.82%
SUPPORTIVE THERAPY	5	14.70%
MISCELLANEOUS	6	17.64%

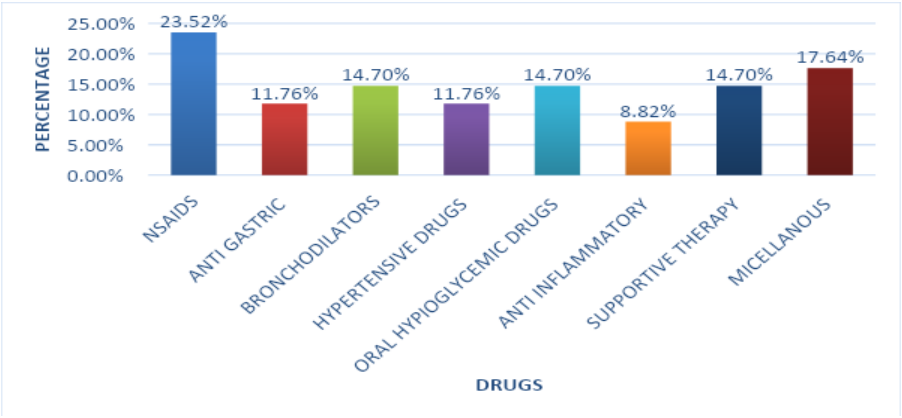

Fig 14: Drug prescribing pattern of TENDINITIS, CARPAL TUNNEL with OTHERS.

Out of 7 cases collected, NSAID'S (23.52%) were commonly prescribed along with adjuvant therapy which includes tramadol. Supportive therapy includes antacids, anti- hypertensive, bronchodilator, anti-inflammatory and some vitamins.

CONCLUSION

Our study concludes that most of the patients admitted for musculoskeletal disorders were mostly males compared to females. Majority of patients were suffering from osteoarthritis and it'scomorbidities. After the analysis of data, it was found that per oral route of administration was the most preferred route of administration in which per oral Aceclofenac + serratiopeptidase were mostly prescribed upon admission to the hospital followed by proteolytic enzyme, and anti-inflammatory drugs. NSAID'S were the preferred drug

of choice. Rationality of the prescription were assessed using WHO core drug prescribing indicators.

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