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A RETROSPECTIVE STUDY ON THE TRENDS OF ANALGESIC UTILIZATION IN COMMON MUSCULOSKELETAL DISORDERS IN GERIATRIC POPULATION

M. N. ANJANA*[1], SHILPA ELIZEBETH JOSEPH[1], SHIJI SUSAN IYPE[1] , SHRUTHI SARA GEORGE[1], SANTHOSH M. MATHEWS[1] AND PHEBA SUSAN THOMAS[2]

1: Department of Pharmaceutics, Pushpagiri College of Pharmacy, Thiruvalla

2: Department of Pharmacy Practice, Pushpagiri College of Pharmacy, Thiruvalla

***Corresponding Author: Dr. M.N. Anjana: E Mail:** anju_niit@yahoo.com

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ABSTRACT

Background: Musculoskeletal disorders (MSDs) are injuries or pain in the human musculoskeletal system. MSDs arise from a sudden exertion, repetitive strain or from repeated exposure to vibration. The main aim is to study the trends of analgesic utilization in common musculoskeletal disorders in geriatric population and to evaluate the prescribing trends of analgesics in common musculoskeletal disorders in geriatric population.

Methodology: A retrospective study was conducted in the Orthopaedic department in a tertiary care setting. The study was carried out for a period of 6 months in which data from January 2018-April 2022 was collected. Patients who satisfied both exclusion and inclusion criteria were selected for the study.

Results: The majority of patients with MSDs were in the age group of 70-79 years. It is evident from the study that MSD was high in females (51.51%). Rheumatoid arthritis (37%) was found to be the most common among MSDs. Most common risk factors associated with MSD were female gender (51.51%). In route of administration of drugs, oral route was found to be more frequently used. Hypertension was the most commonly associated comorbidities for MSD in geriatric population. Most commonly prescribed analgesic drug was paracetamol. In this study, combination therapy was the most commonly prescribed (51.52%) followed by monotherapy (48.48%). Combination therapy was the most commonly used than single

therapy. Paracetamol+Tramadol combination was most commonly used. On comparison with Opioids, Non-opioids were the most frequently used class of drug.

Conclusion: The study finding suggested that the majority of patients with MSD were in the age group of 70-79 years (old old). It was evident from the study that MSD was high in females. Most common risk factor associated with MSD was hypertension. Most common disease was found to be rheumatoid arthritis .The study concludes that Paracetamol was the most commonly prescribed drug for MSDs.

Keywords: Musculoskeletal disorder, Analgesic, risk factor, comorbidities

INTRODUCTION

MUSCULOSKELETAL DISORDER

Musculoskeletal Disorders are disorders or injuries that affect the human body's movement or musculoskeletal system. (i.e. muscle, nerves, discs, blood vessels etc.) Osteoarthritis (OA) **[1]** is the most common type of joint disease seen in geriatric patients. The prevalence of rheumatoid arthritis also increases with advancing age. The onset of RA in both large and small joints in patients older than 60 years is more frequent and begins with greater disease activity as compared to patients younger than 60 **[2]**. Musculoskeletal disorders are one of the major causes of morbidity in geriatric population. Common musculoskeletal disorders include Carpel tunnel syndrome, tendonitis, ligament sprain, osteoarthritis, rheumatoid arthritis and gout **[3]**.

COMMON MUSCULOSKELETAL DISORDERS INCLUDE:

Carpel Tunnel Syndrome-it is caused by pressure on the median nerves. The carpal tunnel is a narrow passageway surrounded by ligaments and bones on the palm side of the hand **[4]**.

Tendonitis: it occurs when a tendon swells (becomes inflamed) after a tendon injury. It may cause joint pain, stiffness and tendon movement.

Muscle/tendon strain: it involves an injury to a muscle or to the band of tissue that attaches a muscle to a bone **[5]**.

Ligament sprain: it is the stretching or tearing of ligaments — the tough bands of fibrous tissue that connect two bones together in the joints.

Rotator cuff tendonitis: it is the swelling of the tissues (tendons) connecting the muscles and bones in the shoulder. Overuse and injury are the common causes of rotator cuff tendonitis **[6]**.

Osteoarthritis: It is the most common form of arthritis, affecting millions of people worldwide. OA occurs when the protective cartilage that cushions the ends of the bones wears down over time **[7]**.

Rheumatoid arthritis: It is an autoimmune and inflammatory disease, which means

that the immune system attacks healthy cells in our body, causing inflammation (painful swelling) in the affected parts of the body **[8]**.

MATERIALS AND METHODS

The study design was single centered, hospital based, retrospective (observational) study. Patients who received Analgesic therapy in the Department of Orthopaedics IP during the study period and who satisfied the inclusion and exclusion criteria was the study population. The proposed study was conducted in a tertiary care setting. The duration of the study was 6 months. The sample size is calculated using the Yamane formula.

$$n = \frac{z^{2}_{\frac{1-\alpha}{2}}\, p(1-p)}{d^2}$$

The sample size for the study is calculated and found to be 198.Inclusion criteria were: Patients of both gender and age above 65yrs and Patients with musculoskeletal disorders, Patients prescribed with analgesics and IP Patients. Orthopaedics outpatients, Patients with malignancies and Patient with incomplete data record were excluded from the study.

OBJECTIVES

1. To evaluate the Prescribing trends of analgesics in common musculoskeletal disorders in geriatric population.
2. To observe the common musculoskeletal disorders in geriatric population.
3. To identify the co-morbidities associated with musculoskeletal disorders.
4. To analyse the effectiveness of opioids over non-opioids.

BRIEF PROCEDURE OF THE STUDY

A retrospective study was conducted in Department of Orthopaedics at Pushpagiri Medical College Hospital on the topic "A Retrospective study on the trends of analgesic utilization in common musculoskeletal disorders in geriatric population. The entire study was carried out after getting approval from Institutional Ethics Committee. The selection of patients was based upon the inclusion and exclusion criteria. Data collection form will be used for recording the demographic details like age, gender etc., risk factors and co-morbidities associated with musculoskeletal disorder. Information about drug treatment (i.e., generic and trade name, formulation, route of administration, dose, frequency) will be collected. Relevant information will be taken from case report. Confidentiality of the data was maintained throughout the study.

RESULTS AND DISCUSSION

1. Distribution of illness.

The commonest disorder for which patient attended Orthopaedic outpatient department were RA in 74(37%) and cervical spondylosis in 42(21.21%) patients followed by OA (18.68%). A similar study conducted by Lyn M March *et al* **[9]** shows arthritis or rheumatism was the leading long term condition, reported by 59.5%,55.8% and 59.7% of women and 40.5%, 47% and 43.6% of men in the three age groups (65-74,75-84 and 85 years and over) respectively **(Table 1, Figure 1)**.

2. Comorbidities associated with MSDs

Among the comorbidities associated with MSD, Hypertension was found to be high in number, it was present in 41 number of patients (20.70%), DM (13.13%), CAD (11.61%), DLP (11.11%), CKD (4.04%), CVA (3.53%), hyperthyroidism (2.52%) Parkinson's disease (3.53%), COPD (2.52%), CLD (2.02%), and 33 number of patients have no comorbidities (16.66%) **(Table 2, Figure 2)**.

3. Distribution of patient based on drug regimen

Out of 198 patients 96 Patients (48.48% were prescribed single analgesics of which T. Dolo is prescribed to 27 (13.63%) patients and T.Ultracet to 19 (9.59%) followed by T.Indomethacin (5.05%) **(Table 3, Figure 3)**.

Fixed dose combination (FDC of NSAIDs with other NSAIDs or opioid analgesic or muscle relaxant were prescribed in 102(51.52%) patients.

Paracetamol+Tramadol were most commonly prescribed in 51(25.75%) patients followed by others **(Table 3.1)**.

It represents the distribution of patients based on drug regimen. Combination therapy was most commonly used in 102 no. of patients (51.52%) followed by monotherapy used in 96 patients (48.48%). It represents the class of drugs prescribed in MSD Patients. In this study, non-opioids were the most commonly prescribed class of drugs (69.70%) followed by opioids (30.3%) as shown in the **Table 3.2 and Figure 3.1**.

4. Distribution of drugs in musculoskeletal disorders.

The most common drug prescribed was Paracetamol in 71 number of prescriptions (29.33%) followed by the second most common drug prescribed was Ultracet in 41 number of prescriptions (16.94%) and Tramadol in 28 prescriptions (11.57%) **(Figure 4)**.

5. Comparison of efficacy of opioid analgesics over non opioid analgesics.

Chi square test is used to find the association between no of days and Opioids prescribed during hospital stay. And it was found that opioids were considered to be more efficacious than non-opioids. If the p value is less than or equal to the significance level (0.05), it can be

concluded that there is a statistically significant association between the variables. **Table 4** represent the comparison of efficacy of opioid analgesics over non-opioid analgesics It is evident from this study that the duration of hospital stay (<3days) was less for patients administering opioids when compared to those who administered non-opioids. P-value was found to be <0.001.

Table 1: Distribution of illness

DISEASE	NO OF PATIENTS (n=198)	PERCENTAGE (%)
SEPTIC ARTHRITIS	4	2.02%
OSTEOMYELITIS	2	1.01%
OSTEOARTHRITIS	37	18.68%
CERVICAL SPONDYLOSIS	42	21.21%
REACTIVE ARTHRITIS	2	1.01%
ROTATOR CUFF TENDONITIS	3	1.51%
RHEUMATOID ARTHRITIS	74	37%
CARPEL TUNNEL SYNDROME	3	1.51%
OSTEOPOROSIS	12	6.06%
GOUT	11	5.55%
PLANTAR FASCITES	2	1.01%
SPONDYLITIS	2	1.01%
POLYARTHRITIS	2	1.01%
LUMBAR SPONDYLOSIS	2	1.01%
TOTAL	198	100%

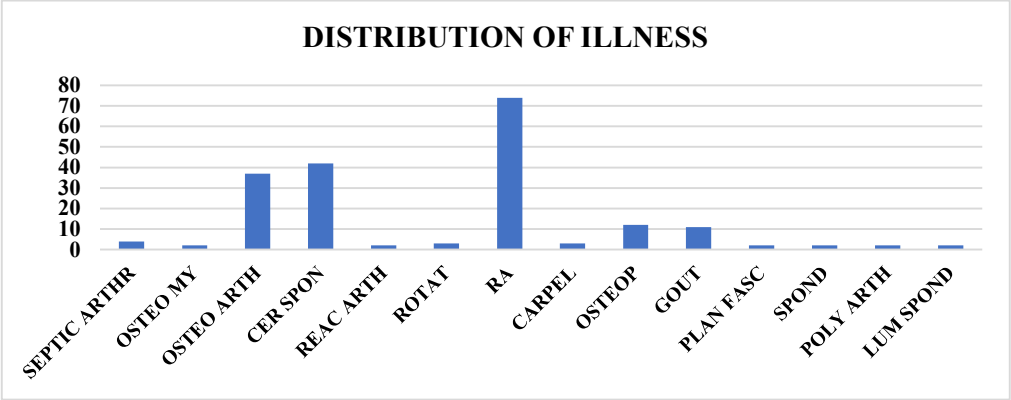

Figure 1: Graphical representation of distribution of illness

Table 2: Comorbidities associated with MSD Patients

COMORBIDITIES	FREQUENCY	PERCENTAGE (%)
HYPERTENSION	41	20.70%
DIABETES	26	13.13%
NIL	33	16.66%
CAD	23	11.61%
ASTHMA	17	8.58%
DYSLIPIDEMIA	22	11.11%
CKD	8	4.04%
CVA	7	3.53%
HYPERTHYROIDISM	5	2.52%
PARKINSON DISEASE	7	3.53%
COPD	5	2.52%
CLD	4	2.02%

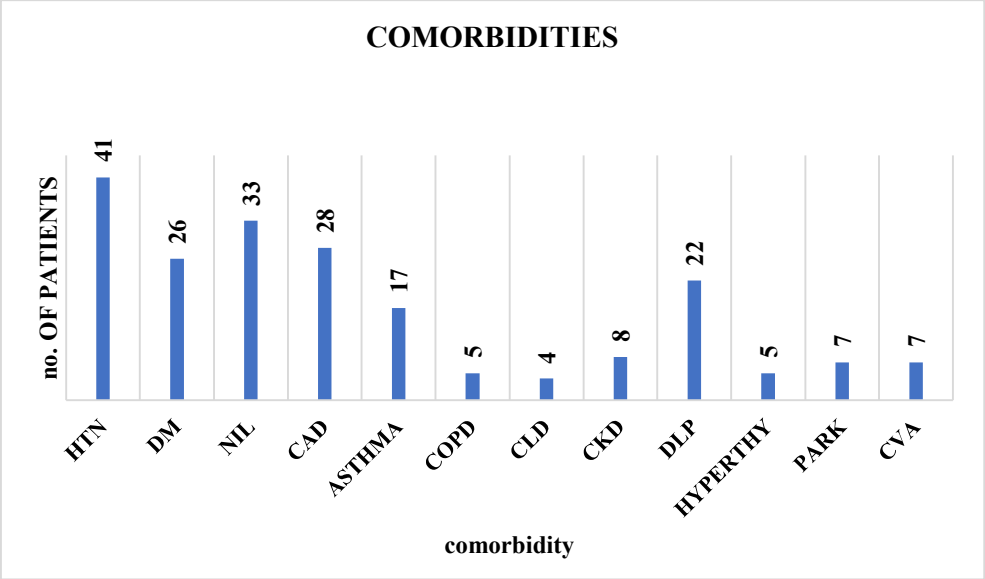

Figure 2: Graphical representation of comorbidities associated with MSD

Table 3: Distribution of patients based on drug regimen

DRUGS NAME	NO OF PRESCRIPTIONS (n=96)	PERCENTAGE (%)
T. CELECOXIB	4	2.02%
T. DOLONEX DT	5	2.52%
T. TAPEL ER	5	2.52%
T. DOLO	27	13.63%
T. ULTRACET	19	9.59%
T. PYRIGESIC	7	8.58%
T. ACELAN PLUS	8	4.04%
INJ.TRAMAZAC	6	3.03%
T. INDOMETHACIN	10	5.05%
T. HIFENAC P	5	2.52%
TOTAL	96	48.48%

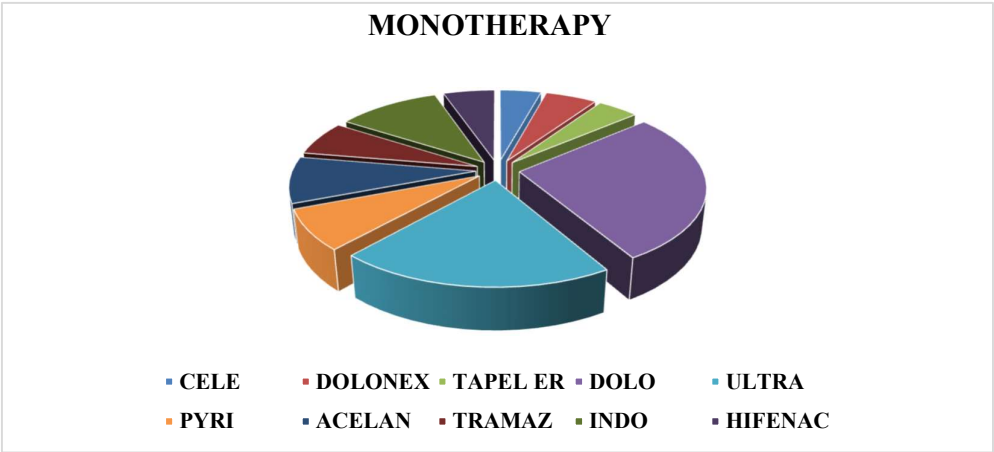

Figure 3: Graphical representation of distribution of patients based on drug regimen

Table 3.1: Combination drug regimen of MSD patients

DRUGS NAME	NO OF PRESCRIPTIONS (n=102)	PERCENTAGE%
PARACETAMOL+ TRAMADOL+ ACETAMINOPHEN	25	12.62%
PARACETAMOL+ TRAMADOL	51	25.75%
PARACETAMOL+ETORICOXIB + THIOCOLCHICOSIDE	4	2.02%
PARACETAMOL +INDOMETHACIN	6	3.03%
TRAMADOL+PARACETAMOL+COXIB	4	2.02%
INJ.DOLONEX+INJ.TRAMAZAC+INJ PACTIV	5	2.52%
PARACETAMOL+DICLOFENAC	4	2.02%
ULTRACET+ACECLOFENAC	5	2.52%
TOTAL	102	51.52%

Table 3.2: Distribution of patients based on drug regimen

TYPES OF THERAPY	FREQUENCY	PERCENTAGE %
MONOTHERAPY	96	48.48%
COMBINATION THERAPY	102	51.52%
TOTAL	198	100

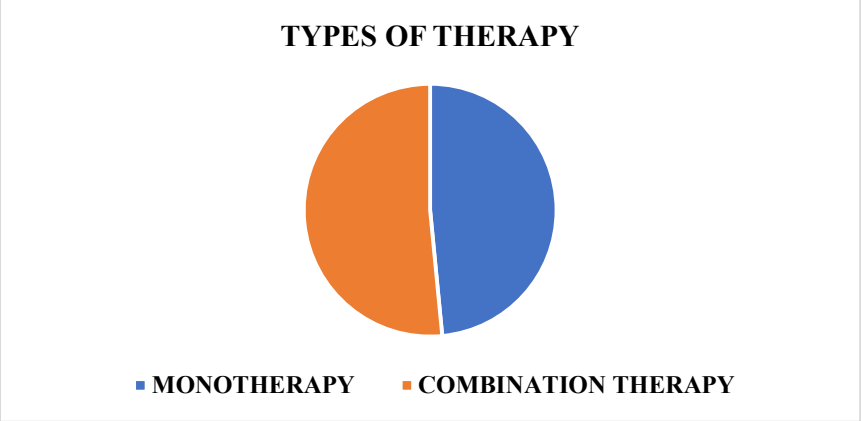

Figure 3.1: Graphical representation of distribution of patients based on drug regimen

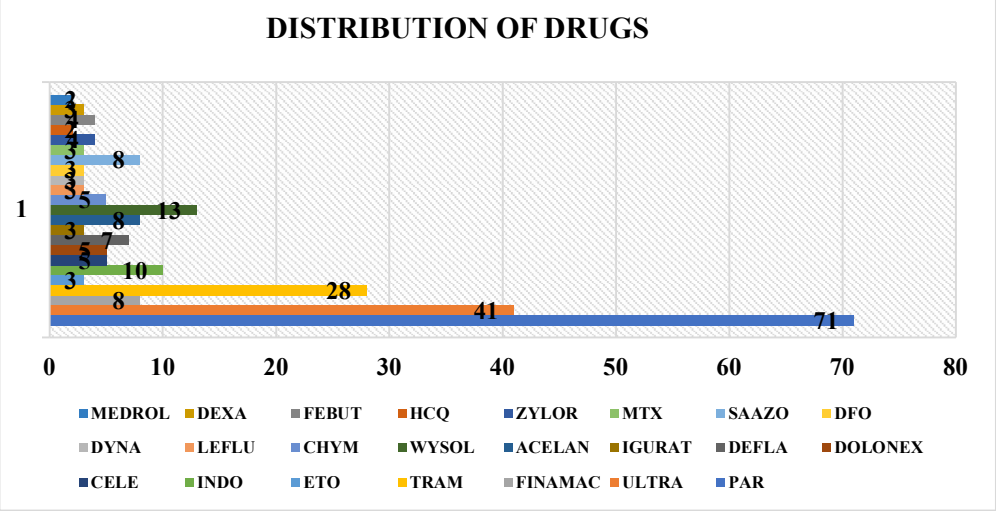

Figure 4: Graphical representation of distribution of drugs

Table 4: Comparison of efficacy of opioid analgesics over non-opioid analgesics

DURATION OF HOSPITAL STAY	OPIOID ANALGESICS	NON- OPIOID ANALGESICS	p value
<3 days	58	0	<0.001
4-5 days	0	3	
>5 days	2	135	
TOTAL	60	138	

CONCLUSION

Musculoskeletal Disorders or MSDs are injuries and disorders that affect musculoskeletal system or human body's movement **[10]**. (i.e. muscles, tendons, ligaments, nerves, discs, blood vessels, etc.). MSDs can arise from a sudden exertion (e.g. lifting a heavy object), or they can arise from making the same motions repeatedly repetitive strain, or from repeated exposure to vibration, force or awkward posture **[11]**. The study finding suggest that the majority of patients with MSD were in the age group of 70-79 years (old old). It is evident from the study that MSD was high in females than in males. Most common risk factor associated with MSD was hypertension followed by Diabetes mellitus, CAD. Most common disease was found to be rheumatoid arthritis. The study concludes that Paracetamol was the most commonly prescribed drug in MSDs.

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