



International Journal of Medicine and Pharmaceutical Research

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RESEARCH ARTICLE

A Prospective Observational Study on Prescribing Patterns of Drugs in Orthopaedic Outpatient Department in a Tertiary Care Teaching Hospital, Nellore

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ABSTRACT

To conduct the prospective observational study on prescribing patterns of drugs in Orthopedic Outpatients Department in a tertiary health care hospital. To describe the demographic characteristics of the patient. To determine the patterns of drug prescribing in diagnosis, drug dosage, dose, route of administration, frequency, concomitant medications. To calculate the average number of drugs prescribed per prescription. To monitor the prescription pattern. To evaluate the prescription, whether it is rational or irrational. A prospective observational hospital-based study was carried out for the period of six months from August to January in the outpatient department of orthopedics at DSR Government hospital. Permission was obtained from the institutional ethical committee. A Prospective Observational Study Orthopaedics and Doddla Subba Reddy (DSR) Government Hospital, Nellore, Andhra Pradesh, India. Out of 237 patients we observed 102 patients were in age group of 41-61 (42.03%), 65 patients were in age group of 21-40 (27.8%), 54 patients were in age group of 61-80 (22.8%), 13 patients were in age group of 1-20 (5.50%), 3 patients were from above 80 years of age (1.5%). Out of 237 patients, we observed the highest number of patients with orthopedic problems are in the age group of 41-60 (42.03%), followed by age group of 21-40 (27.8%), 61-80 (22.8%), 1-20 (5.50 %) and above 80 years (1.5%). This study reveals that peoples of age group 41-60 years are more prone to orthopaedic problems. In patients of age ranging from 41-60 years are suffering more from orthopedic problems. An osteoarthritis and Low backache are the most common problems in the patients visiting the Orthopedic Outpatient Department, followed by Fractures. Diclofenac is the most commonly prescribed drug in the Orthopaedic Department than other Analgesics like Paracetamol, Tramadol. Along with Analgesics H2 blockers like Ranitidine and Proton pump inhibitors like Pantoprazole are also commonly prescribed. The average number of drugs per prescription is 4.6. Non-pharmacological therapy also plays a major role in the Orthopedic Department, among them Physiotherapy and Ice therapy are most commonly recommended. Prescription patterns were found to be sometimes irrational.

Keywords: Orthopedic, Rational or Irrational

ARTICLE INFO

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PAPER QR-CODE

ARTICLE HISTORY: Received 31 January 2018, Accepted 27 February 2018, Available Online 10 June 2018

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Citation: B. Kumar, et al. A Prospective Observational Study on Prescribing Patterns of Drugs in Orthopaedic Outpatient Department in a Tertiary Care Teaching Hospital Nellore. *Int. J. Med. Pharm. Res.*, 2018, 6(3): 111-119.

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1. Introduction

Prescription writing is a science and art, as because it conveys the message from the prescriber to the patient. A prescription by the doctor is taken as the reflection of the physician's attitude to the disease and the role of the drug in the treatment. Periodic evaluation of drug utilization patterns needs to be done to enable suitable modifications in the prescription of drugs to increase therapeutic benefits and decrease adverse effects. Drug therapy is most commonly used the method for disease treatment. However, the pattern of drug prescriptions are sometimes inappropriate and need for guidelines for the pattern is essential in an effort to improve the prescribing standards. The study of prescribing pattern seeks to monitor and evaluate the prescription by a medical practitioner⁴. The impact of inappropriate prescription of drugs also leads to an increase in the incidence of adverse drug events and the emergence of drug resistance

The Most Commonly Seen Disease Conditions in Orthopaedic Outpatient Department

Low Back Pain: Back pain is an extremely common phenomenon, a price mankind has to pay for their upright posture. According to one study, almost 80% of the person in modern industrial society will experience back pain at some time during their life. Fortunately, in 70% of these, it subsides within a month. But in as many as 70% of these (in whom pain had subsided), the pain recurs.

Causes:

The specific aetiology of most back pains is not clear. Some common causes are Congenital causes (Spinal Bifida, Lumbar Scoliosis, Spondylolisthesis, etc.); Traumatic causes (Sprain, Strain, Vertebral fractures, Prolapsed disc); Inflammatory causes (Tuberculosis, Ankylosing spondylitis, SSA); Degenerative causes (Osteoarthritis); Neoplastic causes; Metabolic causes (Osteoporosis, Osteomalacia); Pain referred from viscera (Genitourinary and gynaecological diseases). Traumatic and Postural back pains are among the commonest.

Features of pain: Location, Onset, Localisation of pain, Progress of pain, Relieving and aggravating factors.

Associated symptoms:

Stiffness, Pain in other joints, Neurological symptoms, Extraskelatal symptoms, Mental status.

Treatment: Rest, Drugs, Physiotherapy, Traction, Use of a corset, Education.

Cervical Disc Prolapse

Prolapse of the intervertebral disc in the cervical spine much less common than it is in the lumbar spine. The disc between C5-C6 is the one affected most frequently. The postero-lateral protrusion is the commonest. A typical patient presents with a vague history of injury to the neck, often a jerk or a twisting strain. Symptoms may begin hours

after the episode of injury. The neck becomes stiff and the pain radiates down to the shoulder to the outer aspect of the limb, up to the thumb. Paraesthesias may be felt in the hand. On examination, it may be possible to localise the neurological deficit to a particular nerve root, usually C5. In some cases, there may be signs of cord compression from the front [UMN signs]. X-Rays do not show any abnormality. MRI scan is the imaging modality of choice but should be done if operative intervention is contemplated.

Treatment:

There is a strong tendency to spontaneous recovery. Cases may present with signs of cord compression or root compression in the upper limb. Such cases may require surgery. The disc is exposed from the front and the material removed.

Osteoarthritis [Osteoarthrosis]

Osteoarthritis {OA} is a degenerative joint disease. Commonly it is thought to be wear and tear of joints as one age. Two types of OA are recognised- primary and secondary.

Primary OA:

This occurs in the joint, it occurs in old age. In a generalized variety, the trapezio-metacarpal joint of the thumb and distal interphalangeal joints of the fingers are also affected.

Secondary OA:

In this type, there is an underlying primary disease of the joint which leads to degeneration of the joint, often many years later. It may occur at any age after adolescence and occurs commonly at the hip.

Clinical features: Pain is the earliest symptom. It occurs intermittently I the beginning but becomes constant over months or years. Initially, it is dull pain and comes on starting an activity after a period of rest; but later it becomes worse and cramp-like, and comes after activity. Swelling of the joint is usually a late feature and is due to the effusion caused by inflammation of the synovial tissues. Stiffness is initially due to pain and muscle spasm; but later, capsular contracture and incongruity of the joint surface contribute to it. Other symptoms are a feeling of 'instability' of the joint, and 'locking' resulting from loose bodies and frayed menisci.

Treatment: Principles of treatment: (1) To delay the occurrence of disease, if the disease has not begun yet. (2) To stall the progress of a disease and relieve symptoms, if his disabilities can be partially or completely alleviated. (3) To rehabilitate the patient, with or without surgery, if his disabilities can be partially or completely alleviated. Methods of treatment: (a) Drugs like analgesics. (b) Chondroprotective agents such as glucosamine and

chondroitin sulphate. (c) Viscosupplementation. (d) Supportive therapy. (e) Surgical treatments like osteotomy, joint replacement, joint debridement, arthroscopic procedures

Drug Therapy Usually Seen in Orthopaedic Outpatients

Department: For the treatment of musculoskeletal conditions and ailments, there are a variety of orthopaedic medications available to relieve oneself of the pain. Orthopaedic physicians prescribe mostly following classes of drugs Non-steroidal anti-inflammatory drugs (NSAIDs)

Corticosteroids

Anti-rheumatic drugs (DMARDs)

Non-steroidal anti-inflammatory drugs (NSAIDS)

This class of drugs are in most common use. Among these Aspirin, Ibuprofen and Naproxen groups are available over the counter. For other NSAIDs, the prescription from an orthopaedic doctor is essential. Majorly available in pill form, these NSAIDs include drugs like Diclofenac, Etodolac, Flurbiprofen, Ketoprofen, Oxaprozin, Piroxicam, Nimesulide and Etoricoxib. Orthopaedic physician prefers to prescribe one of these anti-inflammatory drugs at one time. NSAIDs help to provide intern relief to patients. These drugs are beneficial in reducing inflammation, pain and fever. NSAIDs can provide relief for a temporary period but they not meant to cure the ailments that lie underneath.

Risk and side effects of NSAIDs:

Though NSAIDs are considered to be safe, an extended dose of these drugs sometimes causes serious side effects, particularly in patients suffering from arthritis. As NSAIDs pills only can control the symptoms, it is always advisable to consume the lowest doses possible.

Effects on Gastro-Intestinal (GI) Tract

On an average, up to 5% of people who take NSAIDs continuously for a year have been seen to suffer from serious side effects ulcers, bleeding and tears in the GI tract. Prolonged of NSAIDs causes inflammation to the GI tract, the track includes the oesophagus, stomach and intestines. Elderly patients have a higher risk of developing these side effects. Patients with cardiac ailments also run a higher risk of getting the side effects.

Blood effects

NSAIDs like Aspirin are known to affect the clumping of platelets in the blood. In cases of an injury or an open wound, the use of this drug can lead to bleeding problems. That is why the use of Aspirin is prevented two weeks before a person goes to orthopaedic surgery.

Effects on Liver and Kidney

NSAIDs also prove to be virulent to the liver. Though initially, it is not very apparent, a blood test can easily testify the altered levels of certain liver enzymes. As an individual ceases the use of NSAIDs, the functioning of liver returns to normal. It is essential to exercise caution if a patient with past history of kidney problems begins taking NSAIDs, as it affects the kidney thereby preventing the organ from filtering wastes properly.

2. Materials and Methods

A prospective observational hospital-based study was carried out for the period of six months from August to International Journal of Medicine and Pharmaceutical Research

January in the outpatient department of orthopedics at DSR Government hospital. Permission was obtained from the institutional ethical committee. Data was collected from the outpatient cards of the patients visiting the hospital. Patients of all age groups and currently diagnosed with the diseases with or without co-morbidities were included.

Study Design: A Prospective Observational Study

Study Department and Site: *Orthopedics* and Doddla Subba Reddy (DSR) Government Hospital, Nellore, Andhra Pradesh, India.

Study Population: 237 Prescriptions.

Study Duration: 06 Month.

Inclusion Criteria:

- Patients coming to the Orthopedics Outpatients Department mainly.
- Patients of all age groups of either sex.
- Patients who are willing to participate in the study.

Exclusion Criteria:

- Pregnancy and lactating women.
- A patient who is not willing to give consent.
- Patients who are directly admitting inwards because of emergency situations (Inpatients).

Regulatory clearance:

- The study was approved by the Institutional Ethical Committee.

Study Procedure:

- Informed consent form {Annexure-I}.
- Patient data collection form {Annexure-II}.
- Questionnaire form {Annexure-III}.

Statistical analysis:

Descriptive Statistics was used to analyze the Results. SSPS Software version 20.0 was used.

3. Results and Discussion

Data on Distribution of Patients Based on Age

Out of 237 patients we observed 102 patients were in age group of 41-61 (42.03%), 65 patients were in age group of 21-40 (27.8%), 54 patients were in age group of 61-80 (22.8%), 13 patients were in age group of 1-20 (5.50%), 3 patients were from above 80 years of age (1.5%).

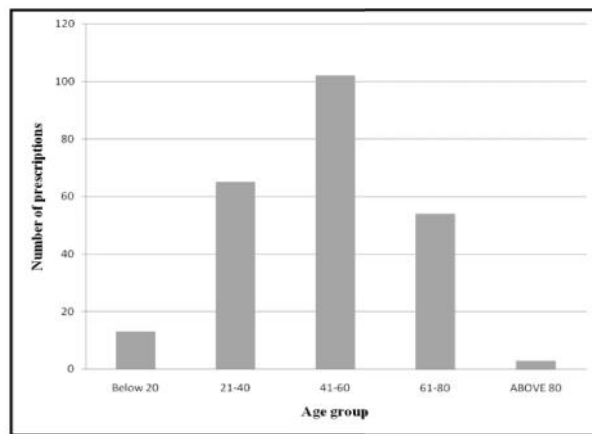


Figure 1: Distribution of patients based on age

Data on Gender Wise Distribution of Patients based on Age: We observed the highest number of patients were

from the age group of 41-60 years (102) among them 37 were males and 65 were females.

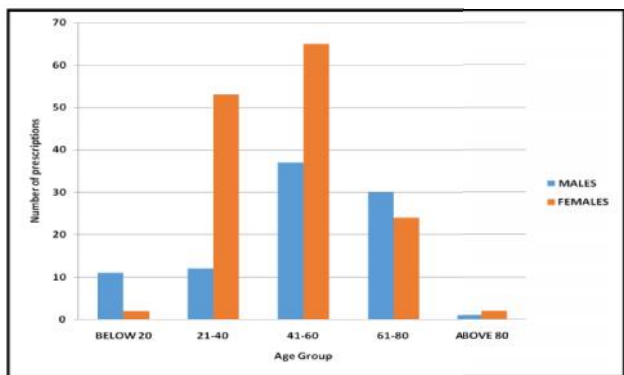


Fig. 2: Gender wise Distribution of Patients based on Age

Data on Distribution of Patients Based on Gender: Out of 237 patients, we observed 91 male patients (38%) and 146 female patients (62%) are consulting the physicians in orthopaedic outpatients department.

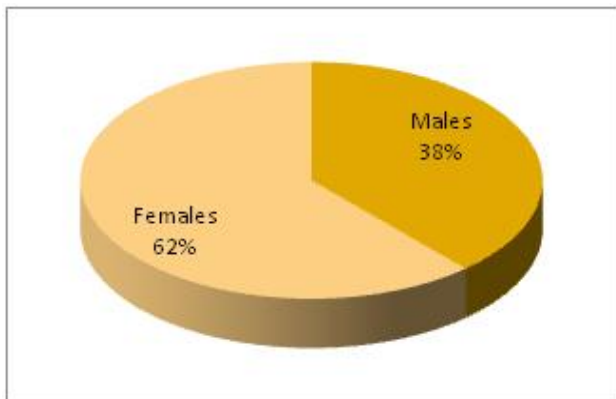


Figure 3: Distribution of Patients based on Gender

Data on Distribution of Prescriptions Based on Diseases

Out of 237 patients, the most commonly seen diseases were Osteoarthritis (25.7%), Low Back Ache (18.1%), followed by Fractures (8.0%), Generalized Body Pains (5.4%), Ankle Sprain (5.4%), Poly arthralgia (5.4%) etc. The Less commonly seen diseases were Soft Tissue Injury etc.

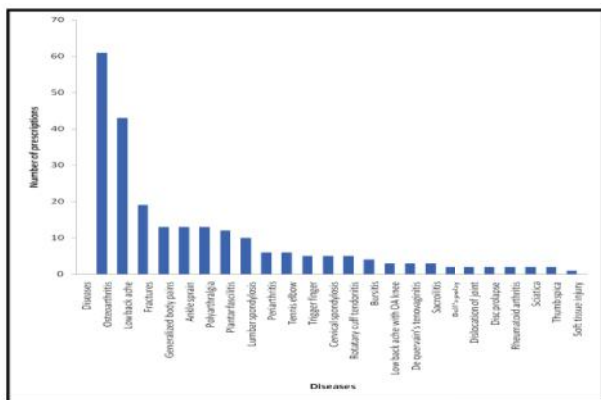


Figure 4: Distribution of Prescriptions based on Disease

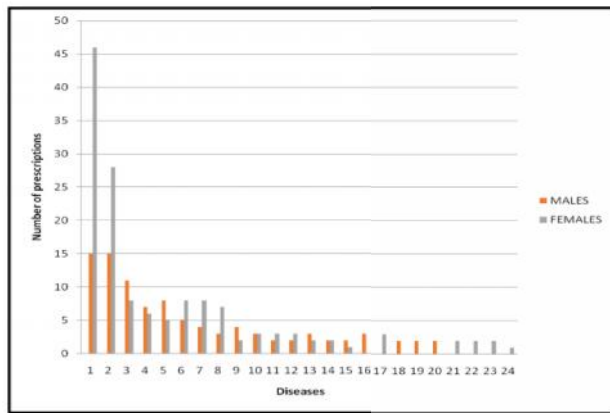


Figure 5: Distribution of diseases based on Gender

Data on Distribution of Prescriptions Based On Co-Morbid Conditions: The most commonly seen Co-morbid conditions were Diabetes and Hypertension. Out of 124 Patients, 31 were with both Diabetes mellitus and Hypertension (25%), 29 were with Diabetes mellitus (23%) followed by 18 were with Hypertension (14.5%).

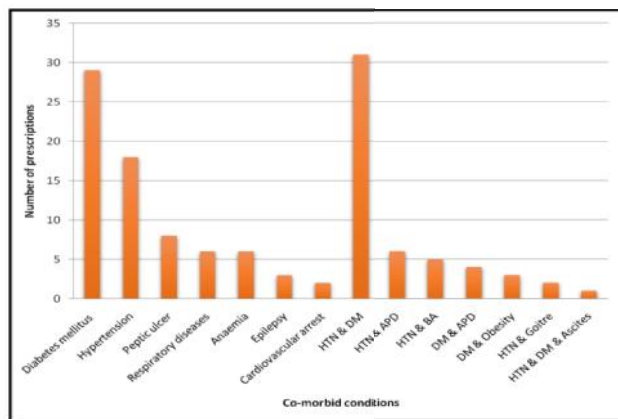


Figure 6: Distribution of Number of Prescriptions based on Co-morbid conditions

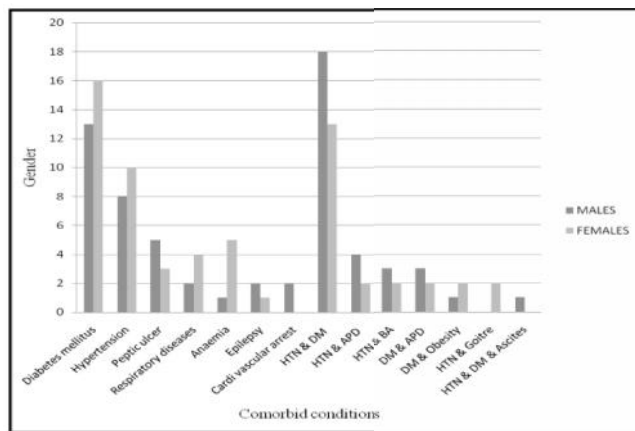


Figure 7: Distribution of Co-morbid Conditions based on Gender

Data on Distribution of Drugs Based on Dosage Forms Out of 33 drugs, 29 were in tablet form (87.88%), 2 were in injection form (6.06%, 3.03%), and 1 is applied topically.

Department in a Tertiary Care Teaching Hospital, Nellore" was conducted for a period of six months. A total of about 255 patients were enrolled in the study based on inclusion and exclusion criteria, 18 patients were excluded due to lack of interest to them in the study. The data on remaining 237 patients were assessed.

Data on Distribution of Patients Based on Age

Out of 237 patients, we observed the highest number of patients with orthopaedic problems are in the age group of 41-60 (42.03%), followed by age group of 21-40 (27.8%), 61-80 (22.8%), 1-20 (5.50 %) and above 80 years (1.5%). This study reveals that peoples of age group 41-60 years are more prone to orthopaedic problems.

Data on Distribution of Patients Based on Gender

Out of 237 patients, a number of female patients are 135 (57%) and a number of male patients are 102 (43%). Females are suffering more with orthopaedic problems when compared with male patients, this is because as the age of the females increases and reach to menopausal stage the oestrogen levels will be sharply decreased, which is responsible for the protection of bones.

Data on Distribution of Patients Based on Diseases

The most commonly seen diseases in the orthopaedic outpatient department are Osteoarthritis, Low backache, Fractures etc. Out of 237 patients 61 are with Osteoarthritis (27.7%) among them 15 are males and 46 are females, 43 are with Low Back Ache (18.1%) among them 15 are males and 28 are females, 19 are with Fractures (8.0%) among them 11 are males and 18 are females, 13 are with Generalized Body Pains (5.4%) among them 7 are males and 6 are females, 13 are with Ankle Sprain (5.4%) among them 8 are males and 5 are females, 13 are with Poly Arthralgia (5.4%) among them 5 are males and 8 are females.

Some less commonly seen diseases are Plantar Fasciitis - 12 (5%), Lumbar spondylosis - 10 (4.2%), Peri arthritis - 6 (2.5%), Tennis Elbow - 6 (2.5%), Trigger Finger - 5 (2.5%), Cervical Spondylosis - 5 (2.1%), Rotatory Cuff Tendonitis - 5 (2.1%), Bursitis - 4 (1.6%), Low Back Ache with OA Knee - 3 (1.26%), De Quervain's Tenosynovitis - 3 (1.26%), Sacroiliitis - 3 (1.26%), Bell's palsy - 2 (0.8%), Dislocation of fore arm - 2 (0.8%), Disc Prolapse - 2 (0.8%), Rheumatoid arthritis - 2 (0.8%), Sciatica - 2 (0.8%), Soft tissue injury - 1 (0.45).

Data on Distribution of Patients Based on Co-Morbid Conditions:

In our study, the most common co-morbid conditions are Hypertension and Diabetes Mellitus. Out of 237 patients 29 are with Diabetes Mellitus (23%) among them 13 are males and 16 are females, 18 are with Hypertension (14.5%) among them 8 are males and 10 are females, 31 are with both Hypertension and Diabetes Mellitus (25%) among them 18 are males and 13 are females. Some less commonly seen co-morbid conditions are Peptic Ulcer Disease - (8 (6.4%), Respiratory diseases - 6 (4.8%), Anaemia - 6 (4.8%), Epilepsy -3 (4.8%), Cardio Vascular Arrest - 2 (1.6%).

Data on Distribution of Drugs Based On Dosage Forms

In our study, out of 33 drugs prescribed 29 drugs are taken through oral route (87.88%), 2 drugs are administered through parenteral route, 1 is applied topically (3.03%) and 1 is administered intra-articularly (3.03%). Most of the drugs are taken through the oral route.

Data on Category Wise Distribution of Drugs

Most commonly prescribed category of drugs are NSAIDs (100%), followed by Anti ulcerative (99%), Vitamin and Mineral supplements (91%), Corticosteroids (21.5%), and antibiotics (13%).

Data on Distribution of Number of Prescriptions Based on Drugs:

The most commonly prescribed drugs are T.Diclofenac (18.4%), T.Calcium (15%), T.Ranitidine (13.6%), T.B complex (11%), followed by T.Pantoprazole (6.3%), T.Prednisolone (4.1%), Inj.Kenocort (3.5%). Some less commonly prescribed drugs are T.Serratiopeptidase (3.1%), T.Myo MR (1.6%) and T.Tramadol (1.1%).

Data on Distribution of Number of Drugs per Prescription:

The highest number of prescriptions are with 7 drugs per prescription (2.9%) and least number of prescriptions are with 2 drugs per prescription (8.0 %).

Data on Distribution of Number of Prescriptions Based On Non Pharmacological Therapy

Physiotherapy (44.5%) and Ice therapy (23%) were most commonly recommended in orthopaedic department followed by MCR chappals (7.5%), Ultrasound therapy for shoulder (6.1%), Knee brace (4.2%), Lumbar belt (2.8%)

Reasons for Irrationality: Due to lack of proper supply of medicines. Due to unavailability of sufficient laboratory equipments. As the result of heavy float of patients especially in government sector hospitals physicians are unable to spend sufficient time per patient.

Table 1: Data on Distribution of Patients Based on Age

S. No.	AGE	Number of Prescriptions	Percentage (%)
1	1-20	13	5.50
2	21-40	65	27.8
3	41 - 60	102	42.03
4	61 - 80	54	22.8
5	Above 80	3	1.5
	Total	237	

Table 2: Data on Gender Wise Distribution of Patients Based on Age

S.No	Age	Males	Females	Total
1	1-20	11	2	13

2	21-40	12	53	65
3	41-60	37	65	102
4	61-80	30	24	54
5	Above 80	1	2	3
	TOTAL	91	146	237

Table 3: Data on Distribution of Patients Based on Gender

S.NO.	Gender	Number of Prescriptions	Percentage (%)
1	Male	91	38
2	Female	146	62
	TOTAL	237	

Table: 4 Data on Distribution of Prescriptions Based on Diseases

S.No.	Diseases	Number of prescriptions	Percentage (%)
1	Osteoarthritis	61	25.7
2	Low backache	43	18.1
3	Fractures	19	8.0
4	Generalized body pains	13	5.4
5	Ankle Sprain	13	5.4
6	Polyarthralgia	13	5.4
7	Plantar fasciitis	12	5.0
8	Lumbar spondylosis	10	4.2
9	Periarthritis	6	2.5
10	Tennis elbow	6	2.5
11	Trigger finger	5	2.1
12	Cervical spondylosis	5	2.1
13	Rotator cuff tendonitis	5	2.1
14	Bursitis	4	1.6
15	A low backache with OA knee	3	1.26
16	De Quervain's tendovaginitis	3	1.26
17	Sacroiliitis	3	1.26
18	Bell's palsy	2	0.8
19	Dislocation of forearm	2	0.8
20	Disc prolapse	2	0.8
21	Rheumatoid arthritis	2	0.8
22	Sciatica	2	0.8
23	Thumb Spica	2	0.8
24	Soft tissue injury	1	0.4
	TOTAL	237	

Table 5: Data on Distribution of Diseases Based on Gender

S.No.	Diseases	Gender		Total
		Male	Female	
1	Osteoarthritis	15	46	61
2	Low back pain	15	28	43
3	Fractures	11	8	19
4	Generalized body pains	7	6	13
5	Ankle Sprain	8	5	13
6	Polyarthralgia	5	8	13
7	Plantar fasciitis	4	8	12
8	Lumbar spondylosis	3	7	10
9	Peri arthritis	4	2	6
10	Tennis elbow	3	3	6
11	Trigger finger	2	3	5
12	Cervical spondylosis	2	3	5
13	Rotatory cuff tendonitis	3	2	5

14	Bursitis	2	2	4
15	A low backache with OA knee	2	1	3
16	De Quervain's tendonitis	3	0	3
17	Sacroiliitis	0	3	3
18	Bell's palsy	2	0	2
19	Dislocation of joint	2	0	2
20	Disc prolapse	2	0	2
21	Rheumatoid arthritis	0	2	2
22	Sciatica	0	2	2
23	Thumb spica	0	2	2
24	Soft tissue injury	0	1	1
	TOTAL			237

Table 6: Data on Distribution of Prescriptions based On Co-Morbid Conditions

S.No	Diseases	Number of prescriptions	Percentage (%)
1	Diabetes mellitus	29	23
2	Hypertension	18	14.5
3	Peptic ulcer	8	6.4
4	Respiratory diseases	6	4.8
5	Anaemia	6	4.8
6	Epilepsy	3	2.4
7	Cardiovascular arrest	2	1.6
8	HTN & DM	31	25
9	HTN & APD	6	4.8
10	HTN & BA	5	4
11	DM & APD	4	3.2
12	DM & Obesity	3	2.4
13	HTN & Goitre	2	1.6
14	HTN & DM with Ascites	1	0.8
	TOTAL	124	

Table 7: Data on Distribution of Co-morbid Conditions based on Gender

S.No.	Disease	Males	Females	Total
1	Diabetes mellitus	13	16	29
2	Hypertension	8	10	18
3	Peptic ulcer	5	3	8
4	Respiratory diseases	2	4	6
5	Anaemia	1	5	6
6	Epilepsy	2	1	3
7	Cardio Vascular Arrest	2	0	2
8	HTN & DM	18	13	31
9	HTN & APD	4	2	6
10	HTN & BA	3	2	5
11	DM & APD	3	1	4
12	DM & Obesity	1	2	3
13	HTN & Goitre	0	2	2
14	HTN & DM & Ascites	1	0	1
	TOTAL	63	61	124

Table 8: Data on Distribution of Drugs Based on Dosage Forms

S.No.	Dosage	Number of drugs	Percentage (%)
1	Oral	29	87.88
2	Parenteral	2	6.06
3	Topical	1	3.03
4	Intra articular	1	3.03
	Total	33	100

4. Conclusion

This type of study will help us to understand the prevalence of various disorders and prescribing patterns in the Orthopaedic Department and the category of drugs used in practice to treat the disorders. In patients of age ranging from 41-60 years are suffering more from Orthopaedic problems. An osteoarthritis and Low backache are the most common problems in the patients visiting the Orthopaedic Outpatient Department, followed by Fractures. Diclofenac is the most commonly prescribed drug in the Orthopaedic Department than other Analgesics like Paracetamol, Tramadol. Along with Analgesics H2 blockers like Ranitidine and Proton pump inhibitors like Pantoprazole are also commonly prescribed. The average number of drugs per prescription is 4.6. Non-pharmacological therapy also plays a major role in the Orthopaedic Department, among them Physiotherapy and Ice therapy are most commonly recommended. Prescription patterns were found to be sometimes irrational.

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