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Original Research Article

Prescribing patterns in the management of arthritis in a rural tertiary care teaching hospital

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ABSTRACT

Background: Based on 2003 National Health Insurance Scheme (NHIS) data, a projected 67 million (25%) adults aged 18 years or older will have arthritis and 25 million (37%) of those will have arthritis-attributable activity limitations by the year 2030. Objective of this study is to know the prevalence of different types of arthritis, current trends of drug prescribing patterns in its management and to create awareness about rational use of drugs in a rural tertiary care hospital.

Methods: This was an observational study of drug prescriptions among 100 arthritis patients in a tertiary care teaching hospital, India. Patients diagnosed with arthritis with or without co-morbidities were enrolled in the study considering the inclusion and exclusion criteria with a verbal informed consent.

Results: Out of 100 arthritis cases, prevalence of Osteoarthritis (OA) was seen more than Rheumatoid arthritis (RA). Osteoarthritis was more commonly seen in males and RA in females. Arthritis was more prevalent in the age group of 36-65 years. Oral route was the most preferred route of administration of drugs and Nonsteroidal anti-inflammatory drugs (NSAIDs) were the first choice. Vitamin D3+ calcium was the most commonly prescribed drug in arthritis. Diclofenac was the most commonly used drug for monotherapy in OA and methotrexate in RA.

Conclusions: In this study, some patients diagnosed with RA were treated with NSAIDs as first line and no Disease Modifying Anti-Rheumatic Drugs (DMARD) were given. This irrational prescribing trend should be changed. Non-pharmacological treatment has a qualitative role in treating arthritis and should be advised instead of multiple drug therapy.

Keywords: Prescribing patterns, Arthritis, Osteoarthritis, Rheumatoid arthritis, Nonsteroidal anti-inflammatory drugs, Disease modifying anti-rheumatic drugs, Vitamin D3+ calcium

INTRODUCTION

Drug utilization research was defined by World Health Organization (WHO) in 1977 as the marketing, distribution, prescription, and use of drugs in a society,

with special emphasis on the resulting medical, social and economic consequences.¹

Prescription writing can be depicted as an art. Since, it reflects the directions given by the prescriber to the patient or their representatives.² Therefore, a prescription written

by a physician is a reflection of his perspective towards the particular disease and the role of drug in its treatment. It also provides an apprehension into the essence of the health care delivery system.³

Rational drug prescribing can be defined as appropriate drugs prescribed in the right dose, at correct time intervals and for a sufficient duration. Irrational drug use is a common problem in many countries of the world.⁴ The assessment of drug utilization is important for clinical, economic and educational purposes.⁵

Periodic evaluation of drug utilization patterns need to be done to enable suitable modifications in prescription of drugs to increase the therapeutic benefit and decrease the adverse effects. The study of prescribing patterns seeks to monitor, evaluate and if necessary, suggest modifications in the prescribing behaviour of medical practitioners to make medical care rational and cost effective.⁶

Arthritis is an acute or chronic inflammation of joint, often accompanied by pain, swelling and stiffness and resulting from infection or injury. Pain is the most common symptom and is associated with bad functional outcomes and poor quality of life. Different kinds of arthritis are, widely spread among the population that make them a clinical problem with social, psychological and economic burden. The management of arthritis is complex and relies on a combination of pharmacological and non-pharmacological approaches including drug treatment, for most of the patients; management of arthritis relies mainly on optimization of pharmacotherapy. Unfortunately, there are many reports of extra medication because of pain. This misuse leads to intoxication and occurrence of adverse drug reactions, hospitalizations, and additional treatment and from there to increase in treatment cost. The treatment options have primarily focused on alleviating the pain associated with this condition.⁷

The term arthritis literally means “joint inflammation”, but it is generally used to refer to a family of more than 100 different conditions that affect the joints and may also affect muscles and other tissues. The most common form of arthritis- degenerative arthritis or osteoarthritis (OA) which results from the breakdown of the tissue inside the joints. The other form is inflammatory arthritis which results from swelling in the joints. Rheumatoid arthritis (RA) is a most common type of inflammatory arthritis.⁸

The prevalence of osteoarthritis in India is very high. Based on 2010-2012 data from the National Health Interview Survey (NHIS), an estimated 52.5 million (22.7%) of adults have self-reported doctor- diagnosed arthritis. 22.7 million (9.8% of all adults) have arthritis and arthritis attributable activity limitation. Based on 2003 NHIS data a projected 67 million (25%) adults aged 18 years or older will have doctor-diagnosed arthritis by the year 2030. An estimated 37% (25 million adults) of those with arthritis will report arthritis-attributable activity limitations by the year 2030.⁹

Approximately 1% of the adult population is affected by RA worldwide. Its incidence is 2 to 3 times greater in women, and this disproportion is most evident in patients younger than 50 years. Until about the 7th decade of life, the incidence of RA continues to increase with age. Approximately, about 0.75% of adult Indian population is negatively affected by the disease which hampers the patients' quality of life.¹⁰

Hence the current study is undertaken to evaluate quality indicators in drug utilization patterns and to create awareness about rational use of drugs.

Objective of this study is to know the prevalence of different types of arthritis, demographic characteristics of the patients and the current trends of drug prescribing patterns in the management of arthritis in a rural tertiary care teaching hospital.

METHODS

This study was conducted at Adichunchanagiri institute of medical sciences (AIMS), B.G. Nagara, Mandya, Karnataka, India.

Study design

The study was a prospective observational study.

Study population

100 cases of arthritis patients were analysed.

Ethical clearance was taken from the Institutional Ethics Committee (IEC) of AIMS, B.G. Nagara, Karnataka, India.

Procedure

The study was conducted from patients of orthopaedic, paediatrics and medicine departments at Adichunchanagiri Institute of Medical Sciences (AIMS), B.G. Nagar from December 2015 to July 2017. Patients diagnosed with arthritis with or without co-morbidities were enrolled in the study considering the inclusion and exclusion criteria. Verbal informed and written consent was taken from patients at the time of enrolment in the study.

Inclusion criteria

Arthritis patients from orthopaedic, paediatrics and medicine departments. Patients who were willing to participate in the study. Patients diagnosed with arthritis with or without co-morbidities.

Exclusion criteria

Patients who were not willing to participate in the study.

Statistical analysis

Fully completed data were analysed and expressed in percentages (%) using Microsoft excel software.

RESULTS

Out of 100 cases, arthritis was more commonly seen in male patients than female patient (Table 1).

OA and RA were more prevalent in the age group of 36-65 years (Table 2). Prevalence of OA was more than RA (Table 3). More number of drugs are prescribed per prescription rather than single drug (Table 4). Oral route was the most preferred route of administration in the management of both OA and RA (Table 5).

NSAIDs were the first choice of drugs prescribed in both OA and RA patients (Table 6). Vitamin D3+ calcium was the most commonly prescribed drug both in OA and RA patients (Table 7). Diclofenac was the most commonly used drug for monotherapy in OA (Table 8).

Analgesics were the most commonly used drugs for 2 drug therapy in OA and RA (Table 9 and 10).

Table 1: Details of gender distribution of patients (n=100).

Gender distribution	Number of patients	Percentage (%)
Male	58	58
Female	42	42
Total	100	100

Table 1 shows that generally Arthritis is more commonly seen in male patients 58 (58%) than female patients 42 (42%).

Table 2: Details of age distribution of patients (n=100).

Age distribution (years)	Number of patients	Percentage (%)
20-35	5	5
36-50	25	25
51-65	59	59
66-80	10	10
>80	1	1
Total	100	100

Table 3: Details of disease distribution (n=100).

Disease	Number of patients	Percentage (%)
Osteoarthritis	84	84
Rheumatoid arthritis	16	16
Total	100	100

Table 2 shows the age wise distribution of RA and OA patient and the result revealed that both RA and OA were more prevalent in the age group of 36-65 years (25%+59%=84%).

Table 3 shows that prevalence of OA 84 (84%) is more than RA 16 (16%).

Table 4: Number of drugs per prescription (n=100).

Number of drugs	Number of prescriptions	Percentage (%)
1	0	0
2	15	15
3	63	63
4	13	13
5	7	7
6	2	2
Total	100	100

Table 4 shows that more number of drugs are prescribed per prescription rather than single drug.

Table 5: Details of route of drug administration (n=318).

Route	Number of drugs prescribed	Percentage (%)
Oral	219	68.86
Topical	63	19.81
Injectable	36	11.32
Total	318	100

Table 5 shows that oral route 219 (68.86%) is the most preferable route of administration in the management of arthritis followed by topical 63 (19.81%) and Injectable 36 (11.32%).

Table 6: Details of class of drugs prescribed (n=249).

Class of Drugs	Number of Drugs prescribed	Percentage (%)
NSAIDs	105	42.16
Opioid analgesics	29	11.64
Corticosteroids	34	13.65
Multivitamins and minerals	69	27.71
DMARDs	12	4.81
Total	249	100

Table 6 shows that NSAIDs 105 (42.16%) are the first choice of drugs used in the management of arthritis followed by vitamin D3+ calcium 69 (27.71%).

Table 7 shows that vitamin D3+ calcium 69 (34.15%) was the most commonly used drug.

Table 8 shows that diclofenac are the most commonly used drug for monotherapy in OA 8 (40%).

Table 7: Details of drugs prescribed single / combination (n=202).

Drug name	Number of prescriptions	Percentage (%)
Diclofenac	12	5.94
Aceclofenac	5	2.47
Paracetamol	11	5.44
Hydroxychloroquine	4	1.98
Methotrexate	8	3.96
Prednisolone	15	7.42
Deflazacort	19	9.4
Tramadol	12	5.94
Calcium + Vitamin D3	69	34.15
Diclofenac + Paracetamol	12	5.94
Aceclofenac + Paracetamol	18	8.91
Aceclofenac + Tramadol	17	8.41
Total	202	100

Table 8: Details of drugs used in monotherapy in OA (n=20).

Drug name	Number of prescriptions	Percentage (%)
Diclofenac	8	40
Aceclofenac	3	15
Paracetamol	5	25
Tramadol	4	20
Total	20	100

Table 9: Details of drugs used in 2 drug therapy in OA (n=42).

2 Drug Therapy	Number of patients	Percentage (%)
NSAIDs + NSAIDs	22	52.38
Aceclofenac + Paracetamol	12	28.57
Diclofenac + Paracetamol	10	23.8
NSAIDs + Steroid	8	19.04
Diclofenac + Deflazacort	5	11.9
Diclofenac + Prednisolone	3	7.14
NSAIDs + Opioid analgesic	12	28.57
Aceclofenac + Tramadol	4	9.52
Paracetamol + Tramadol	5	11.9
Diclofenac + Tramadol	3	7.14
Total	42	100

Table 9 shows that NSAIDs + NSAIDs are the most commonly used drugs for 2 drug therapy in OA 22 (52.38%).

Table 10 shows that NSAIDs + Opioid analgesics are the most commonly used drugs for 2 drug therapy in RA 5 (55.55%).

Table 10: Details of drugs used in 2 drug therapy in RA (n=9).

2 Drug therapy	Number of patients	Percentage (%)
DMARDs + DMARDs	1	11.11
Hydroxychloroquine + Methotrexate	1	11.11
NSAIDs + DMARDs	3	33.33
Aceclofenac + Methotrexate	3	33.33
NSAIDs + Opioid analgesic	5	55.55
Aceclofenac + Tramadol	5	55.55
Total	9	100

DISCUSSION

Gender

The study shows that RA was commonly seen in female patients 13 (81.25%) than male patients 3 (18.75%) which was in accordance with the conducted by Ahmed et al and Premkumar et al, also OA was more common in male 49 (58.33%) patients than female patient 35 (41.66%) which was in accordance with the study conducted by Ahmed et al.¹¹ Hence, this study revealed that the gender distribution in OA and RA found to be more in males than in females.

Age

Age distribution in OA was found to be more prevalent in the age group between 51-65 years 51 (60.71%) and age distribution in RA was found to be more in the age group of 36-65 years 14 (87.5%). This study reveals that, both OA and RA were more prevalent in the age group of years 36-65 years which was found to be in accordance with the study conducted by Ahmed et al and Gurung et al.¹²

Prevalence of disease

The study shows that prevalence of OA 84 (84%) is more than RA 16 (16%) which was in accordance with the conducted by Ahmed et al and Gurung et al.¹³

Drug nomenclature

The study shows that brand name (79%) were more commonly used than generic name (21%).

Number of drugs per prescription

The study shows that maximum number of prescription contains about 3 drugs 63 (63%) and in a case of RA maximum number of prescription contains about 4 drugs 7 (43.75%) and in OA maximum number of prescription contains about 3 drugs 61 (72.61%).

Route of administration

It was observed in the study that drugs were prescribed by oral route 61 (85.91%) is the most preferable route of administration in the management of rheumatoid arthritis followed by injectable 8 (11.26%) and topical route 2 (2.81%) which was in accordance with the conducted by Gurung et al and in case of OA that 158 (63.96%) drugs were prescribed by oral route followed by topical route 61 (24.69%) and injectable 28 (11.33%). This was found to be in accordance by the study conducted by Ahmed et al.

Classes of drugs prescribed

The results revealed that NSAIDs 105 (42.16%) were the first choice of drugs prescribed in both OA and RA patients. In OA, NSAIDs 82 (44.08%) were the first choice of drugs followed by vitamin D3+ calcium 58 (31.18%) which was in accordance with the study conducted by Ahmed et al and in RA, NSAIDs 23 (36.5%) were first choice followed by DMARDs 12 (19.04%) which was contrast to the study conducted by Ahmed et al.

Drugs prescribed

The study shows that vitamin D3+ calcium was the most commonly prescribed drug both in OA and RA patients 69 (34.15%) followed by Deflazacort 19 (9.4%) and Aceclofenac+PCT 18 (8.91%) which was found to be in contrast with the study conducted by Ahmed et al and Gurung et al.

Approach of management of arthritis

The study shows that more number of OA patients were treated with combination therapy 64 (76.19%) than monotherapy 20 (23.8%) and more number of RA patients were treated with monotherapy 10 (62.5%) than combination therapy 6 (37.5%) which was found to be in accordance with the study conducted by Ahmed et al and Gurung et al.

The study shows that Diclofenac was the most commonly used drug for monotherapy in OA 8 (40%) which was found to be in accordance with Purushottam et al and Ahmed et al and Gurung et al and Methotrexate was the only drug used for monotherapy in RA 10 (100%).¹⁴

In combination therapy more number of patients were treated with 2 drug therapy 51 (63.75%) followed by 29 (36.25%) patients with 3 or more drug therapy.

In two drug therapy, in OA, out of 42 patients, 22 (52.38%) patients were prescribed with a combination of NSAIDs + NSAIDs, followed by other drug combinations and in RA, out of 9 patients, 5 (55.55%) were prescribed with a combination of NSAIDs + opioid analgesics followed by other drug combinations.

The results revealed that in OA, out of 22 patients treated with 3 or more drug therapy, 10 (45.45%) patients were treated with NSAIDs + NSAIDs + vitamin D3 + calcium, followed by other drug combinations and in RA, out of 7 patients treated with 3 or more drug therapy, 4 (57.14%) patients were treated with NSAIDs + NSAIDs + Opioid analgesics, followed by other drug combinations.

Though literature says DMARDs should be given as first line as soon as patient is diagnosed with rheumatoid arthritis. Here, in some patients diagnosed with RA were irrationally treated with NSAIDs as first line and no DMARDs were given. This may lead to progression of the disease. This may be due to patient unable to afford the drugs, lack of knowledge about the disease, lack of adherence to the treatment and this being a private hospital, DMARDs are not freely available.

CONCLUSION

The present study shows that OA is the most common type of arthritis. RA was commonly seen in female patients and OA was more common in male patients. Age distribution in OA was found to be more prevalent in the age group between 51-65 years and in RA was found to be more in the age group of 36-65 years. The study reveals that, both OA and RA were more prevalent in the age group of years 36-65 years. Oral route 61 (85.91%) is the most preferable route of administration in the management of arthritis. More number of patients were treated with combination therapy than monotherapy. NSAIDs were the first choice of drugs prescribed in both OA and RA patients. Vitamin D3+calcium was the most commonly prescribed drug both in OA and RA patients. Diclofenac was the most commonly used drug for monotherapy in OA and Methotrexate was the only drug used for monotherapy in RA.

In this study, some patients diagnosed with RA were irrationally treated with NSAIDs as first line and no DMARDs were given. Therefore, one should take proper interventions to change such irrational prescribing trends. Non-pharmacological treatment has a qualitative role in treating arthritis. There were very few prescriptions of non-drug therapy such as physiotherapy and exercise. So, instead of taking multiple drug therapy one should also advise patient regarding the non-pharmacological treatments and their benefits.

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