



DIABETES; A HINDRANCE IN MUSCULOSKELETAL DISEASES

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Article Info: Received 28 April 2019; Accepted 23 May. 2019

DOI: <https://doi.org/10.32553/jbpr.v8i3.602>

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Conflict of interest statement: No conflict of interest

ABSTRACT:

Background: Diabetes mellitus (DM) affects connective tissues in many ways and causes different alterations in periarticular and skeletal systems. Musculoskeletal complaints (MSCs) are among the major health problems worldwide and the most frequent cause of long term sickness.

Objectives: To assess the prevalence, treatment pattern of musculoskeletal diseases with diabetes mellitus and to evaluate the impact of patient counselling overcome the barriers of diabetes in musculoskeletal disease.

Materials & Methods: A prospective observational study was carried out for a period of six months at Departments of Orthopedic and General medicine, Basaveshwara Medical College & Research center and Ambarish's Clinic, Chitradurga. A total of 118 subjects were included as per study criteria.

Results: Among 118 subjects 17 (14.4%) had musculoskeletal manifestations with DM. The study shows that 55.9% patients were males and 44.06% were females. The maximum number of patients comes under the age of 51-60yrs. The NSAIDs prescribed were Diclofenac (8.69%), Paracetamol (8.69%) and Piroxicam 4(8.69%) and the Antidiabetic drugs in present study were Oral hypoglycemic followed by Insulin. Most of the patients are affected with Osteoarthritis (47.05%), followed by Adhesive capsulitis (11.76%) and Osteoporosis (11.76%).

Conclusion: The study reveals that the prevalence of musculoskeletal disease with DM is significantly high and osteoarthritis is the common disease. Males are more affected than females with an age group of 51-60.

Key words: Diabetes mellitus, musculoskeletal disease, prevalence, prescription pattern.

INTRODUCTION

Diabetes mellitus is a group of disorders characterized by chronic hyper glycaemia due to relative insulin deficiency, or resistance or both¹. According to world health organization (WHO) statistics published in 2013, approximately 347 million people worldwide suffer from diabetes, and by 2023 diabetes will be the seventh leading cause of death². India is popularly known as a "diabetes capital of the world".³ The causes of increased musculoskeletal pain in people with diabetes are probably related to vascular insufficiency, neuropathy, decreased insulin-like growth factor, accelerated osteoporosis, obesity sedentary life style and other factors.²

DM affects connective tissues in many ways and causes different alterations in periarticular and skeletal systems. Several musculoskeletal disorders have been described, which can be divided into three categories: A) Disorders which represent intrinsic complications of diabetes, such as limited joint mobility or diabetic cheiroarthropathy, stiff hand syndrome, and diabetic muscular infraction. B) Disorders with an increased incidence among diabetics, such as Dupuytren's disease, Shoulder capsulitis, neuropathic arthropathy, osteopenia (in type 1 DM), Flexor Tenosynovitis, septic arthritis, acute proximal neuropathy, proximal motor neuropathy, Pyomyositis and the diffuse idiopathic skeletal Hyperostosis (DISH) syndrome, Backache. C) Disorders for which a possible association with diabetes has been proposed but not proven yet,

such as osteoarthritis and the carpal tunnel syndrome.⁴

Rheumatic disorders in DM have been associated with disease duration, degree of metabolic control and the presence of end organ damage.⁵

Non-steroidal anti-inflammatory drugs (NSAID's) are widely prescribed for the treatment of pain and inflammation in patients with various musculoskeletal.⁶ Most currently available traditional NSAIDs act by inhibiting COX enzyme. The inhibition of COX-2 is thought to mediate, the antipyretic, analgesic, and anti-inflammatory actions of traditional NSAIDs, while the simultaneous inhibition of cyclooxygenase-1(COX-1).⁷ The oral Anti-diabetic drug classes were Biguanides, Sulfonylureas, Alpha-Glucosidase Inhibitor, Repaglinide and Thiazolidinediones. Metformin was the only prescribed Biguanides. Insulin was prescribed for patients with type 2 Diabetes mellitus.⁸

Co-morbidity among patients with diabetes is associated with considerable consequences for health care and related costs.⁹ Management of every patient should commence with a detailed assessment at the initial diagnosis including an appraisal of diabetes complications and risk factors for complications. This provides the basis for continuing care that includes a treatment plan, treatment administration, monitoring, and review.¹⁰

Health promotion has been described as, the process of enabling people to increase control over, and to improve, their health. There are five strategies to improve better patient care: Build healthy public policy, Create supportive environments, Strengthening community action, Developing personal skills, Re-orienting health services.¹¹

MATERIALS AND METHODS

Study Site: The study was conducted at both outpatient and inpatient Departments of Orthopedic and General medicine of Basaveshwara Medical college Hospital & Research Center and Ambarish's Health center, Chitradurga.

Study Design: A prospective Interventional study.

Study Period: This study was conducted for 6 months from 2017 to 2018.

Study Subjects: This study included inpatients and outpatients visiting Orthopedic as well as General Medicine departments. Patients who meet the following criteria were enrolled.

STUDY CRITERIA

Inclusion Criteria

- Inpatients and outpatients of Orthopedic and Medicine departments.
- Subjects of both genders.
- Subjects who were diagnosed with any musculoskeletal disorder and Type 2 Diabetes mellitus for more than 2 years.
- Subjects who were above 30 years.

Exclusion Criteria

- Pregnant and lactating women.
- Subjects who met with accident as well as fractures.
- Subjects who were at Coma stage.

STATISTICAL ANALYSIS

The collected data was entered in Microsoft Excel 2010 version and Descriptive method was used for the analysis.

RESULTS

1. Distribution of subjects according to age.

Out of 118 patients, maximum number of patients comes under the age of 51-60 and minimum number of patients comes under the age of 81-90.

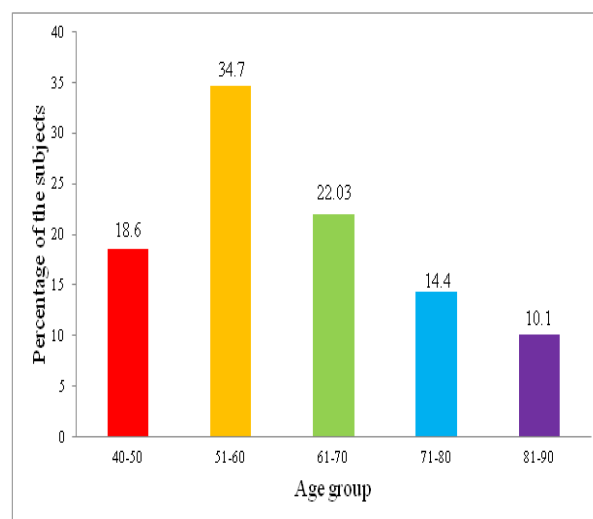


Figure 1: Age group distribution

2. Distribution of subjects according to Gender.

Out of 118 patients 55.9% were males and 44.06% were females.

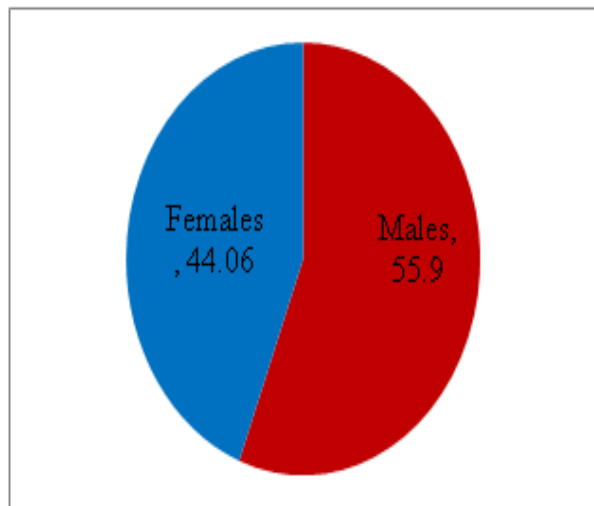


Figure 2: Gender distribution

3. Distribution of subjects according to diagnosis

Out of 118 Patients 14.4% patients were suffering from diabetes with musculoskeletal disease and 101 with Diabetes.

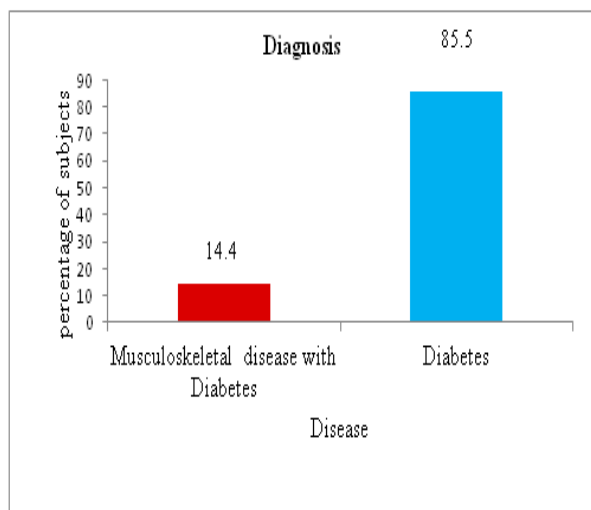


Figure 3 Distribution of subjects according to diagnosis

4. Distribution of subjects according to Musculoskeletal Diseases.

Out of 17 patients, 8 patients were suffering with OA knee, 2 patients with adhesive capsulitis and osteoporosis, 1 patient with Rheumatoid arthritis, Trapezoidal muscle spasm, Lumbar Spondylosis, Reflex sympathetic dystrophy and diabetic peripheral neuropathic pain.

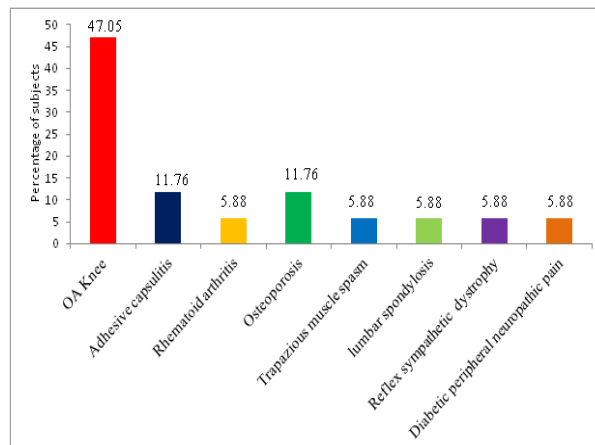


Figure 4: Differential diagnosis

5. Distribution of Drugs according to class

Out of 81 drugs prescribed, oral analgesics 46 were the drugs prescribed with high frequency and antibiotics 1 with least frequency.

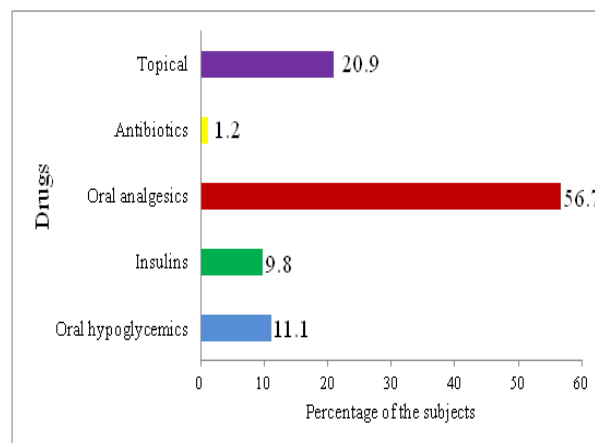


Figure 5: Distribution of drugs according to class

6. Impact of patient counselling

During the visit 1, the subjects were having various problems associated with musculoskeletal disease and diabetes. Patient counselling was done and the patients were reviewed in the subsequent visit which revealed that the knowledge about the disease has improved with reduction in complaints. 11 patients showed improvement in their condition, 4 patients remained the same whereas 2 patients only had slight improvement.

DISCUSSION

The present prospective interventional study was conducted to assess the prevalence and treatment pattern of musculoskeletal disease associated with diabetes and to assess the impact of patient counselling in the outpatients and inpatients of

Basaveshwara medical college hospital, Chitradurga. Musculoskeletal (MSK) complications of diabetes mellitus (DM) are the most common endocrine arthropathies.¹² Several personal, occupational and psychosocial factors are additive in the presence of DM and thus increase the frequency of hand and shoulder problems in the diabetic population.¹³ A comprehensive pharmaceutical care plan for the patient with DM will integrate considerations of goals to optimize blood glucose control and protocols to screen for, prevent, or manage microvascular and macrovascular complications.¹⁴

In another twin study conducted by **Umesh KS et al**, a similar result was observed in the total number of subjects assessed for various Musculoskeletal manifestations, subjects amounting to had the manifestation and their age group.³ In present study, 118 were included and 17 (14.4%) had musculoskeletal manifestations with DM. They were divided into five groups based on their age. Out of 118 patients 41(34.7%) were from 51-60 age group. In the study population, 55.9% patients were males and 44.06% were females, a similar result was observed in a study done by **Ahmad I et al**, on the topic "Musculoskeletal disorders in long standing Diabetes mellitus cases.¹

Among 17 patients, NSAIDs prescribed were Diclofenac (8.69%), Paracetamol (8.69%) and Piroxicam 4(8.69%).(as shown in table no-9) In the study done by **Farheen H et al**, on Prescription pattern of non-steroidal anti-inflammatory drugs in patients with acute musculoskeletal pain, the result obtained was Diclofenac followed by Combination of paracetamol and tramadol.⁷ Mostly prescribed Antidiabetic drugs were Oral hypoglycemics followed by Insulin. Oral hypoglycemic prescribed were Glimepiride + Metformin 4(44.4%), Glimepiride 2(22.3%), Glipizide + Metformin 2(22.2%) and metformin 1(11.1%).(as shown in table no-7)The insulin were Human Actrapid 7(87.5%),Isophane 1(12.5%).(as shown in table no-8)In the study done by **Yusefzadeh G et al**, on Prescription Pattern Study in Type 2 Diabetes Mellitus in Diabetic out Patients in Private Clinics in Iran, the result obtained was Oral antidiabetic drugs were maximally prescribed followed by insulin.⁸

In the study population 47.05% had Osteoarthritis, followed by Adhesive capsulitis

(11.76%),Osteoporosis(11.76%).**Attar SM**., conducted a study on Musculoskeletal manifestations in diabetic patients at a tertiary center.¹² And the results found that the most common manifestations were carpal tunnel syndrome, shoulder adhesive capsulitis and diabetic amyotrophy which is also the pattern seen in another study done by **Kidwai SS et al**, on Upper limb musculoskeletal abnormalities in type 2 diabetic patients in low socioeconomic strata in Pakistan.¹³

In this present study the knowledge about the disease, effectiveness of therapy, role of selfcare management were assessed by direct interaction with patient and it shows positive response which is further supported by the results of a similar study conducted by **Rashid M et al**, on Prevalence of Co-morbidities in Type 2 Diabetes Mellitus Patients, the Awareness Level and the Impact of Pharmacist's Patient Education Program.⁹

CONCLUSION

According to the analyzed results and from review of literature, the conclusions made are;

1. Prevalence of musculoskeletal disease with diabetes was significantly high.
2. This can be attributed to the prevalence of gender inequality as a result of which males are preferentially taken to tertiary care institutes for treatment as compared to females with a similar severity of illness.
3. Osteoarthritis was most common disease found in musculoskeletal diseases.
4. The optimum management of individual patients may vary in the clinical course of the disease and individual needs.
5. Mostly prescribed Antidiabetic drugs were Oral hypoglycemic followed by Insulin.
6. For musculoskeletal diseases NSAIDs like diclofenac, Paracetamol and piroxicam were most commonly prescribed.
7. The knowledge regarding disease, diet and life style modification among musculoskeletal disorder with diabetes mellitus was improved after the patient education.

ACKNOWLEDGEMENT

I am highly indebted to my guide Dr. Bharathi D R, Principal SJM College of Pharmacy, Chitradurga, for their continuous support, Dr. Ambarish Sharma for the motivation and guidance throughout the tenure of this work in spite of hectic schedule who truly remain driving spirit and their experience gave me light in this work and helped me in clarifying the abstruse concepts.

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