# Joints Problems among Patients With Diabetes Mellitus Attending To Al-Hilla Teaching Hospital In Hilla City

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## Abstract

**Introduction**: The prevalence of diabetes for all age groups worldwide was estimated to be increasing . This will inevitably result in an increasing prevalence of the diabetes and associated conditions including rheumatic manifestations ,especially Osteoarthritis (OA) , and the high rate of disability related to disease make it a leading cause of disability in the elderly **Method:** the cross - sectional survey was conducted in Al-Hilla teaching hospital department of orthopedic surgery in Hilla city during the period March 2015 to 31 December 2017. 300 patients with type 2 diabetes mellitus was selected non randomly 150 males and 150 females between ages 39 – 77years to show the prevalence of osteoarthrosis among type 2 D.M patients in relation to sex, duration of D.M and body mass index. **Results:** the occurrence of osteoarthrosis among D.M patients was 30%. Osteoarthrosis was statistically significant (P=0.0003). In D.M patients with BMI more than 25 (48%). Osteoarthrosis was found more in patients with long duration of D.M which was statistically significant (P=0.001) since more than 15 years duration was 52% of D.M patients while duration of less than 5 years was 8%. **Conclusion**: OA in diabetic patients is common and it's more prevalent in obese and in female DM with long duration of disease.

***Keys word:*** *joint problems, diabetes mellitus, Al-Hilla teaching hospital, Babil province.*

## Introduction

Diabetes mellitus is a metabolic illnesses in which an individual has elevated blood glucose level either because of the pancreas doesn't generate adequate insulin or for the reason that cells don't reply to the insulin that's formed[1]. elevated blood sugar creates the traditional problems of recurrent urination, raised thirst and increased hunger. We enclose three kinds of diabetes mellitus: I. Kind 1: derive from metabolism failure to generate insulin. II. Kind2: that produce from insulin resistance, where cells can't apply insulin correctly. III. Gestational diabetes happen particularly ladies who are pregnant without previous diabetes[2].

The occurrence of diabetes for almost every ages internationally was calculated 2.8% in 2000[3]. This rising occurrence will finally cause a rising occurrence for your chosen severe diabetes in addition to related disorders such as rheumatic symptoms [4]. The rheumatologically symptoms of diabetes mellitus are the next syndromes of limited joint ability to move, diabetic hand syndrome, frozen shoulder, flexion tenosynovitis, osteoporosis, neuropathies: Charcot joints, diabetic osteoarthropathy, carpal tunnel syndrome and so on[5].

Osteoarthritis (OA) will be the most common kind of arthritis. Its top occurrence, commonly in the older people, along with the elevated level of impairment dependent on illness make it a major reason for disability in the older people. As a result of the aging of Western world people as well as obesity, a significant factor rising in occurrence, the existence of osteoarthritis is present increasing. In the United States, osteoarthritis occurrence will

raise by 66-100% by 2020[6,7]. Osteoarthritis is the top reason for musculoskeletal handicap on this planet[5]. Hyperglycemia decreases dehydroascorbate transport into chondrocytes, which may compromise the synthesis of type II collagen, and hyperglycemia increases reactive oxygen species (ROS) well known major deleterious mediators for cartilage destruction[8,9].

## Patients and Methods

Three hundred patients with type 2 diabetes mellitus attended the orthopedic unit at AL- Hilla teaching hospital in Babil province during the period March 2015 to 31 December 2017 were enrolled, 150 of them were males and 150 were females their ages ranged from ( 39 —77 ) years and the duration of disease ranged from (1 — > 15) years.

Detailed history was taken including the age, sex, duration of disease, duration of treatment, past medical, drugs history, and BMI. BMI was calculated for all the patients using the following equation: BMI=Weight (Kg)/ (height (M)$^2$.

All patients performed X- Ray (standing anteroposterior and lateral view) to the knee joint by using (Fixed X-ray Shimazu 2008). The following changes were taken into consideration for the proposal of analysis: (narrowing of joint space, osteophytes formation, subchondral calcinosis and subchondral cysts). In this study, other secondary causes of osteoarthritis, history of trauma and pregnancy were excluded. This study design was prevalence descriptive a cross sectional survey; statistics was performed using SPSS 16, p value of lower than 0.05 was reflected statistically significant

## Results

Three hundred diabetic patients, 150 (50%) were females and 150 (50%) were males. The mean age of the patients was 50.78 ± 7.35 years ranging from 39 to 77 years. Out of 300, 90 patients (30%) had OA, 60 (of them are females (40%) and 30 are males (20%); the remaining (210) patients 70% without OA, (90) were females (42.8%), (120) were males (57.2%) with p value =0.029 which is statically significant as in table no.1.

**Table 1.Relationship between gender and OA in DM2 patients.**

| Gender | No OA | % | OA | % | Total | % |
|---|---|---|---|---|---|---|
| female | 90 | 60 | 60 | 40 | 150 | 100 |
| male | 120 | 80 | 30 | 20 | 150 | 100 |
| total | 210 | | 90 | | 300 | |

Out of 300 patients 129 patients had BMI >25 kg/m2, 171 patients had BM1 <25 kg/m2. From 90 patients with OA. 63 patients had BMI ≥25 kg/m2, 27 patients had BM1 <25 kg/m2. The relationship between obesity and OA was statistically significant (p =0.0003), as in table (2):

**Table 2. Relationship between BMI and OA in DM2**

| BMI | No OA | % | OA | % | Total | % |
|---|---|---|---|---|---|---|
| <25 | 144 | 85 | 27 | 15 | 171 | 100 |
| ≥25 | 66 | 52 | 63 | 48 | 129 | 100 |
| total | 210 | | 90 | | 300 | |

OA was found more in patients with longer duration of DM which was statistically significant (p=0.0015) as shown in table (3)

**Table 3: The relationship between period of DM and OA in diabetic patients.**

| Duration of DM (years) | No OA | % | OA | % | Total | % |
|---|---|---|---|---|---|---|
| 1-5 | 69 | 92 | 6 | 8 | 75 | 100 |
| 6-10 | 60 | 84 | 12 | 16 | 72 | 100 |
| 11-15 | 48 | 58 | 36 | 42 | 84 | 100 |
| >15 | 33 | 48 | 36 | 52 | 69 | 100 |
| total | 210 | | 90 | | 300 | |

## Discussion

Diabetes mellitus (DM) can attack the bone and joint structure in a number of steps, the metabolic perturbations in diabetes : glycosylation of proteins; microvascular problems injure to blood vessels plus nerves; and collagen deposits in skin and periarticular structures lead in modifications in the connective tissue[10].

In this study, the prevalence of osteoarthritis (OA) in diabetic patients was 30%, OA was more common among females (40%), than in males (20%) and these result was similar to meta-analysis study done by Velandai K.[11], the same results obtained in study done in USA showed 43% of Osteoarthritis occur in male and 57% in female[12] with significant association between gender and osteoarthritis.

In this study there is a significant association between high BMI (≥25) and osteoarthritis in diabetic patients <25 (15%) and ≥25 ( 48%) similar to study done in Netherlands showed body mass index (BMI) >27.4 kg/m$^2$ had a significant association with osteoarthritis[13]. Also study done in Germany showed the same association between high BMI (≥25) and osteoarthritis in diabetic patients and say: "Obesity seems to be a mechanical rather than a systemic risk factor for OA with the knee joint being especially

susceptible."[14] also our study similar to study done by Büchele G showed significant between high BMI (≥25) and osteoarthritis in diabetic patients[15], this results also similar to results in study done in USA reported that BMI more than or equal to 25 kg/m2 was most powerfully connected with OA[12].

In our study a significant relationship between duration of DM in years and OA in diabetic patients more occur in patients with duration of DM 11-15 years and >15 years

statistically significant and these matching with study done in morocco reported that Most rheumatic problems appear to be related with the duration of DM and appear in[16] and also our study similar to done in Egypt state than the duration of DM in years associated with OA development[17].

## Conclusion

OA in diabetic patients is common and it's more prevalent in obese and in female DM with long duration of disease. Overall, an association between DM and OA seems to exist and additional studies to alarm and explore the pathophysiology of the connection of the two disorders, including a large number of patients.

**Ethical Clearance:** The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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