## *Original Article*

# *Frequency of Adhesive Capsulitis among Diabetes Mellitus Patients*

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## Abstract

***Objective:*** *The aim of the present study was to observe the frequency of Adhesive Capsulitis among Diabetes Mellitus patients.*

***Methods:*** *A descriptive, cross sectional study was conducted from January 2019 to June 2019 among 200 patients attending at Physical Medicine and Rehabilitation Department, Bangabandhu Sheikh Mujib Medical University after obtaining requisite consent from the patients. Data were collected through the assessment of patients in the Outpatient Department. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to know the frequency of Adhesive Capsulitis among Diabetes Mellitus patients.*

***Results:*** *Mean age of patients with adhesive capsulitis was 54.85±9.35 years. Among 200 Diabetes Mellitus (DM) patients majority 35% was between 51-55 years. Among 200 patients 61% was female and 39% was male. Among the DM patients 54(27%) had adhesive capsulitis, and 146(73%) did not have adhesive capsulitis. Female patients (65%) suffered from more adhesive capsulitis of shoulder than male patients (35%). Mean FPG among patients with adhesive capsulitis was 174.85±33.35mg/dl, mean PPPG was 235.52±47.43mg/dl, mean $HbA_1c$ was 9.82±0.86 and Mean BMI was 24.33±2.07.*

***Conclusion:*** *Overall frequency of adhesive capsulitis among diabetic individuals attending in physical medicine and rehabilitation department of a tertiary care hospital was 27%. The disease affects predominantly females in sixth decade of age.*

***Keywords:*** *Adhesive Capsulitis, Diabetes mellitus.*

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## Introduction

Adhesive capsulitis (AC) results in progressive painful restriction in range of movement and can reduce function and quality of life[1]. Diabetes Mellitus (DM) is a chronic metabolic condition characterised by persistent hyperglycaemia with resultant morbidity and mortality related primarily to its associated microvascular and macrovascular complications[2]. There is a well-documented relationship between adhesive capsulitis and diabetes mellitus. 10.8% diabetics and 2.3 % non-diabetics were found to have periarthritis of the shoulder, a statistically significant difference between the two groups of patients ($P<0.005$)[3]. Meta-analysis showed that patients with DM were 5 times more likely than controls to have Adhesive capsulitis. A high prevalence of Adhesive capsulitis exists in DM and equally a high prevalence of DM is present in Adhesive capsulitis. Screening should be considered in patients presenting with Adhesive capsulitis[1]. There were three consecutive stages: pain, stiffness and recovery. The stiffness stage was usually related to the duration of the recovery stage. The total duration was longer than generally supposed (an average total of 30.1 months in contrast to about 18 months as often postulated). Generally speaking, the longer the stiffness stage is, the longer is the recovery stage[4]. Several studies have been conducted worldwide, a small number of study has been found in Bangladesh. Considering the importance of the topic, the study was designed to estimate the frequency of adhesive capsulitis in diabetic patients in a tertiary care hospital.

## Materials & method

A descriptive, cross sectional study was conducted from January 2019 to June 2019 among 200 patients attending at Physical Medicine and Rehabilitation Department, Bangabandhu Sheikh Mujib Medical University after obtaining requisite consent from the patients. Purposive sampling was adopted for collecting data. The study was approved by the institutional ethical committee. The assessment of patients were held directly in the Outpatient Department. The relevant information was entered into the predesigned proforma to know the frequency of Adhesive Capsulitis among Diabetes Mellitus patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1)

## Result

Mean age of patients with adhesive capsulitis was 54.85±9.35 years. In 200 patient's majority 35% was between 51-55 years, 31% was between 56-60years, 22% was between 46-50 years, 12% was between 40-45 years. Among 200 patients 61% was female and 39% was male. (Table 1)

**Table 1: Demographic characteristics of the study population (n=200)**

| Parameters | Number | Percentage |
|---|---|---|
| **Age of the patients** | | |
| 40 - 45 years | 24 | 12 |
| 46 - 5 0 years | 44 | 22 |
| 51 - 55 years | 70 | 35 |
| 56 - 60 years | 62 | 31 |
| **Total** | **200** | **100** |
| **Sex** | | |
| Male | 78 | 39 |
| Female | 122 | 61 |
| **Total** | **200** | **100** |

A total of 200 patients with diabetes were included in the final analysis. Among the DM patients 54(27%) had adhesive capsulitis, and 146(73%) did not have adhesive capsulitis. (Figure 1)

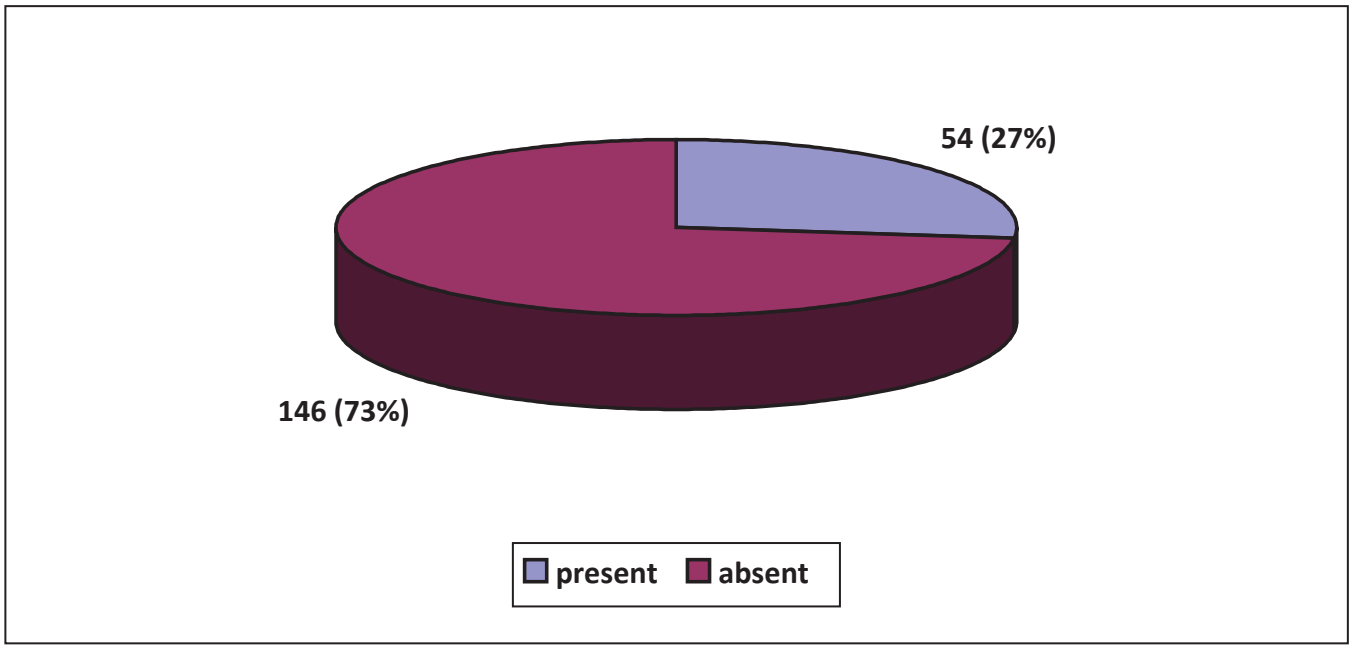


**Figure 1: Distribution of patients according to frequency of Adhesive Capsulitis (n=200)**

Female patients (65%) suffered from more adhesive capsulitis of shoulder than male patients (35%). (Figure 2)

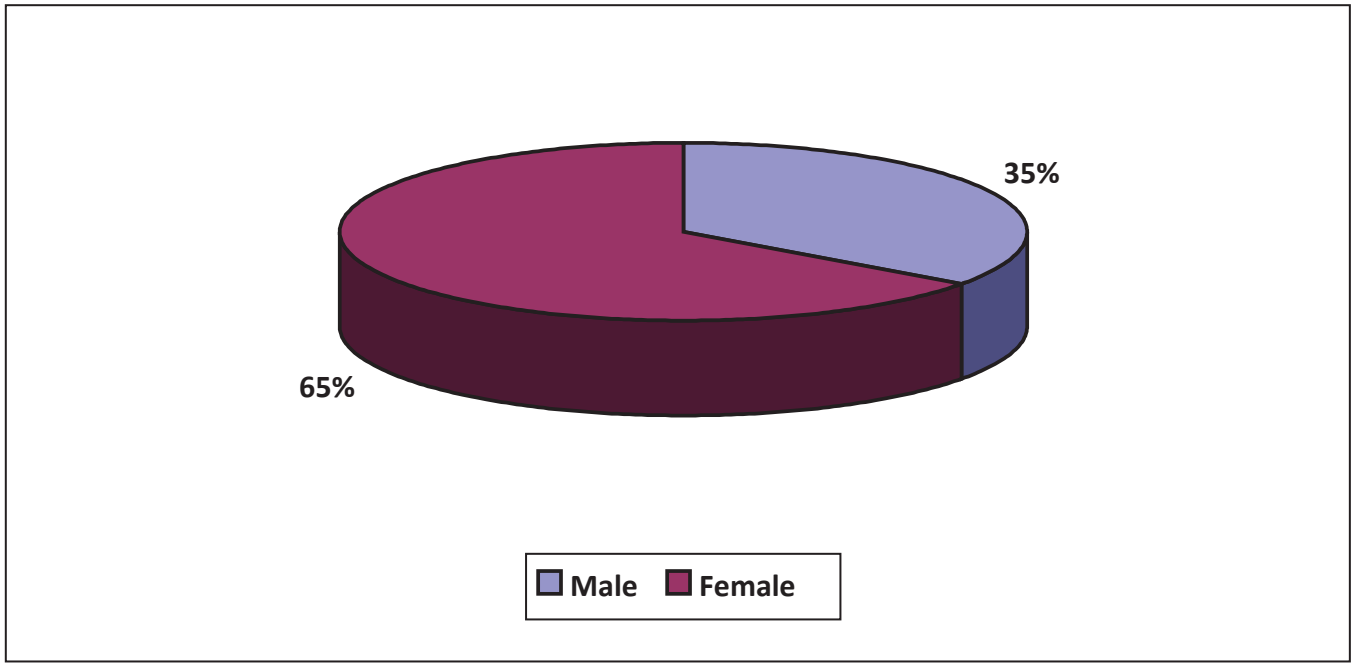


**Figure 2:** Pie chart showing presence of adhesive capsulitis among male and female (n=54).

Among the adhesive capsulitis patients 4 (7.4%) person had duration of DM for 1 month to 1 year, 13(24%) for 1-10 years, 22 (40.8%) for 10-20 years and 15(27.8%) for >20 years. (Table 2)

**Table 2: Adhesive Capsulitis in relation to duration of Diabetes in years (n=54)**

| Duration of diabetes in years | Number of adhesive capsulitis patients | Percentage |
|---|---|---|
| 1 month -1year | 4 | 7.4 |
| >1-10 years | 13 | 24 |
| >10 -20 years | 22 | 40.8 |
| >20 years | 15 | 27.8 |

Among 200 patients with diabetes mean FPG among patients with adhesive capsulitis was 174.85±33.35mg/dl. Mean PPPG among patients with adhesive capsulitis was 235.52±47.43mg/dl. Mean $HbA_1c$ values among patients with adhesive capsulitis was 9.82±0.86 Mean BMI among patients with adhesive capsulitis was 24.33±2.07. (Table 3)

**Table 3: Diagnostic test of DM and BMI in relation to Adhesive capsulitis patients (n=54)**

| Trait | Glucose level of Adhesive Capsulitis patients (mg/dl) | P value |
|---|---|---|
| FPG (mg/dl) | 174.85(±33.35) | 0.003 |
| 2Hab (mg/dl) | 235.52(±47.43) | 0.007 |
| $HbA_1c$ | 9.82(±0.86) | <0.00 1 |
| BMI | 24.33(±2.07) | 0.793 |

*** p determined by independent t test**

## Discussion

Adhesive capsulitis is a distinctive clinical entity, usually occurring in the fifth and sixth decades. It may be associated with trauma or with various illnesses, but most cases are idiopathic. The evidence for disease relationships is uncovering with the possible exception of diabetes mellitus. A total number of 200 patients with diabetes were included in the final analysis. Among the patients 54(27%) had adhesive capsulitis, and 146(73%) did not have adhesive capsulitis. So, prevalence of Adhesive Capsulitis was 27%. A study

was conducted by Khan et al. in a tertiary care hospital of Bangladesh upon 300 diabetic and 300 non-diabetic individuals. There, frequency of Adhesive Capsulitis in diabetic group was 20% and in non-diabetic group it was 5.66%[5]. According to that study our frequency result is higher. Probably because, a lot of diabetic patients with Adhesive Capsulitis come from BIRDEM General Hospital, which is a diabetic hospital and very near to BSMMU. Mean age of patients with adhesive capsulitis was 54.85±9.35 years. Among 200 patients, majority 35% was between 50-55 years, 31% was 56-60 years, 22% was 46-50 years, 12% was 40-45 years. In a case report in Bangladesh by Uddin et al. reported that mean age of the patients was 53 years which is similar to our study[6]. Other observer found maximum patients 39% were between the age group of 51-60 which is also similar to our study[7]. Among 200 patients with 61% was female and 39% was male. In a study by Ahmed et al. reported among 325 patients 52.3% were male and 47.7 % were female which is not similar to us[8]. In another study by Khan et al. 31.67% patients were male and 68.33% were female which is similar to our study[9]. In this study among 200 patients with diabetes who had adhesive capsulitis mean duration of diabetes was 16.48±4.79 years ($p<0.001$). Mean FPG among patients with adhesive capsulitis was 174.85±33.35mg/dl ($p<0.05$). Mean 2Hab among patients with adhesive capsulitis was 235.52±47.43 mg/dl ($p<0.05$). Mean $HbA_1c$ values among patients with adhesive capsulitis was 9.82±0.86 ($p<0.001$). Mean BMI among patients with adhesive capsulitis was 24.33±2.07 ($p>0.05$). In an observational study by Thasni M et al. prevalence of adhesive capsulitis in diabetic patients in a tertiary care center mean duration of diabetes in years among patients with adhesive capsulitis was 18.42±7.68 years ($p<0.001$). Mean fasting plasma glucose level in patient with adhesive capsulitis was 176.57±51.34 mg/dl ($p<0.001$). Mean post prandial plasma glucose level among patient with adhesive capsulitis was 252.69±71.75 mg/dl ($p<0.001$). Mean $HbA_1c$ level in patient with adhesive capsulitis was 9.81±1.78 mg/dl ($p<0.05$). Mean BMI level among patient with adhesive capsulitis was 24.97±3.17 mg/dl which is similar to our study[10].

## Conclusion

Overall frequency of adhesive capsulitis among diabetic individuals attending in physical medicine and rehabilitation department of a tertiary care hospital was 27%. The disease affects predominantly females in sixth decade of age. Moreover, it is linked with patients suffering longer period of DM and also related with blood glucose level. However, further larger studies are needed to finalize the comment.

## Acknowledgements

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**Conflict of interests:** None

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