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Prevalence Of Shoulder Pain And Awareness Of Frozen Shoulder Among Population With Type 2 Diabetes Mellitus

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ABSTRACT

Background: Shoulder pain and frozen shoulder (adhesive capsulitis) are common musculoskeletal complications among individuals with type 2 diabetes mellitus (T2DM). However, its occurrence in diabetic individuals in health care settings is underreported.

Objective: To estimate the occurrence of frozen shoulder among diabetic patients in a tertiary hospital.

Method: A cross-sectional study was conducted on 150 participants recruited from multispecialty hospital. SPADI questionnaire was used to assess the severity of pain and disability index.

Result: Results indicated that 92 (61.3%) participants experienced shoulder pain, with 48 (52.2%) displaying symptoms suggestive of frozen shoulder. Despite this high prevalence, only 27 (18%) participants were aware of frozen shoulder as a potential diabetic complication. Among those with shoulder pain, only 35% sought medical consultation, while others relied on self-medication or alternative remedies.

Conclusion: The findings highlight the significant burden of shoulder pain in diabetic individuals and the low awareness of frozen shoulder, which may contribute to delayed diagnosis and inadequate management. Given the impact of frozen shoulder on daily activities and quality of life, targeted education and proactive musculoskeletal assessments in diabetes care are essential.

Keywords: *diabetes mellitus, frozen shoulder, PA shoulder, T2DM.*

1. INTRODUCTION

Diabetes mellitus (DM) is a chronic disease caused by insulin deficiency characterized by common symptoms of chronic hyperglycaemia with impaired carbohydrate, fat, and protein metabolism[1]. In type 2 diabetes mellitus (T2DM) there is a resistance to insulin in which body fat, muscles, and liver cells do not use insulin appropriately[2, 3]. Largely due to genetic susceptibility combined with changing lifestyles of low physical activity and high-calorie diet may lead to morbidity and mortality in this population worldwide and diabetes-related 1/3rd of deaths occur under the age of 60years[3].

Clinically, frozen shoulder can be divided into three stages. During the first stage, known as freezing, shoulder stiffness and discomfort range from moderate to severe and continue for two to nine months. The shoulder becomes more rigid, but the level of discomfort lessens[2,3]. The second stage of the illness, known as the frozen period, lasts between four and

fourteen months. The third stage, known as thawing, is when the shoulder joint's restricted mobility starts to mend and the symptoms gradually go away. It lasts between five and twenty-four months[3].

The prevalence of shoulder disorders is notably higher in individuals with diabetes than in the general population. However, awareness regarding this condition remains low, leading to delayed diagnosis and treatment. Shoulder pain, particularly frozen shoulder, is a frequent yet under-recognized problem among diabetic individuals[4]. The exact pathophysiology is not fully understood, but chronic hyperglycemia is believed to contribute to structural changes in the shoulder joint, leading to inflammation and fibrosis[4]. Studies indicate that individuals with diabetes are at a significantly higher risk of developing frozen shoulder compared to non-diabetic individuals, with reported prevalence rates ranging between 10% and 30%[5].

Despite its high prevalence, frozen shoulder often remains undiagnosed or mismanaged due to a lack of awareness among patients and healthcare providers[6]. Limited mobility and persistent pain significantly impact daily activities, reducing the quality of life and increasing the risk of disability[7]. Early recognition and appropriate intervention, including physical therapy and medical management, can help mitigate complications and improve patient outcomes. This study aims to assess the prevalence of shoulder pain and awareness of frozen shoulder among 150 individuals with T2DM[8]. By evaluating the extent of the problem and understanding the gaps in knowledge, this research seeks to highlight the need for targeted education and proactive musculoskeletal screening in diabetic care[9].

2. METHODOLOGY

A cross-sectional study was conducted among 150 participants diagnosed with T2DM. Participants were recruited from diabetic clinics and community healthcare centers through convenience sampling. Data collection involved SPADI questionnaire to assess the severity of pain and disability index. Total of 300 participants included in this study, eligible participants were those aged above 30 years, those confirmed with type 2 diabetes, and those who provided informed consent. Exclusion criteria included a previous history of trauma or surgery in the shoulder, other known causes of shoulder pain, and severe systemic illnesses. Participants underwent thorough clinical assessments, including demographic data, medical history, HbA1c levels, and shoulder pain/mobility evaluation. The condition was diagnosed based on the insidious onset of pain, progressive restriction of shoulder movements, and exclusion of other causes.

3. STATISTICAL ANALYSIS

Statistical analysis was conducted to evaluate the prevalence of shoulder pain and the level of awareness regarding frozen shoulder among individuals with Type 2 Diabetes Mellitus (T2DM). Descriptive statistics were used to summarize demographic data, including age, gender, and the presence of shoulder pain. Categorical variables were presented as frequencies and percentages, while continuous variables were reported as means and standard deviations.

TABLE 01: DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

CHARACTERISTICS	VALUE
Total participants	150
Age	55±12 years
Gender (Female :Male)	92:58 (61%:38%)

The above table shows the analysis of Demographic and clinical characteristics.

TABLE 02: SHOULDER PAIN DISTRIBUTION BY GENDER

Gender	Total numbers	Reported pain	Percentage
Male	52	38	0.655
Female	98	76	0.826

The above table shows the analysis of Shoulder Pain Distribution by gender.

TABLE 03: THE OCCURRENCE OF FROZEN SHOULDER WITH TYPE 2 DM

HbA1c level (Mean±SD)	8.1±1.5
Prevalance of frozen shoulder	27 (18%)

The above table shows the value of mean and standard deviation of frozen shoulder with type 2 diabetes mellitus

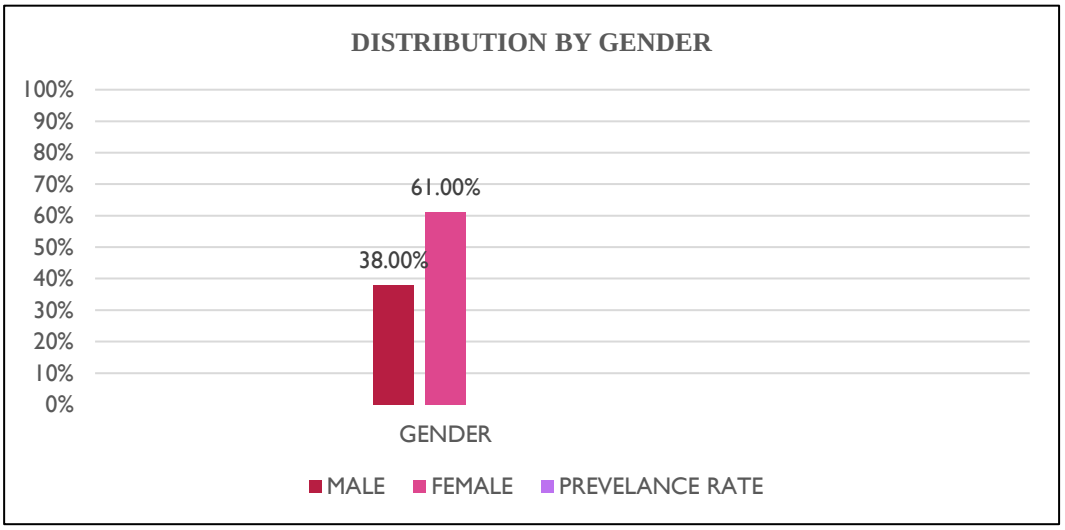

FIG 1: shows the percentage of gender distribution

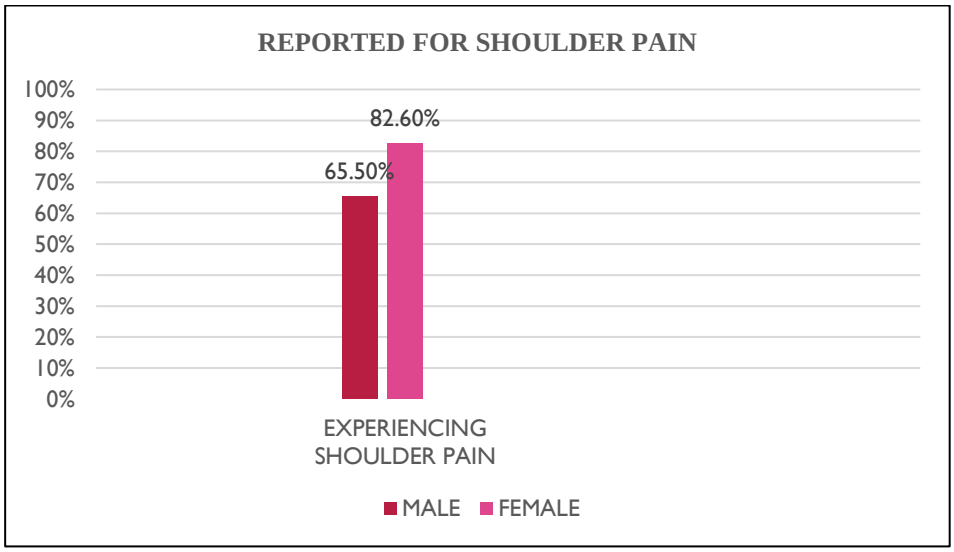

FIG 2: Shows the percentage of people reported for shoulder pain

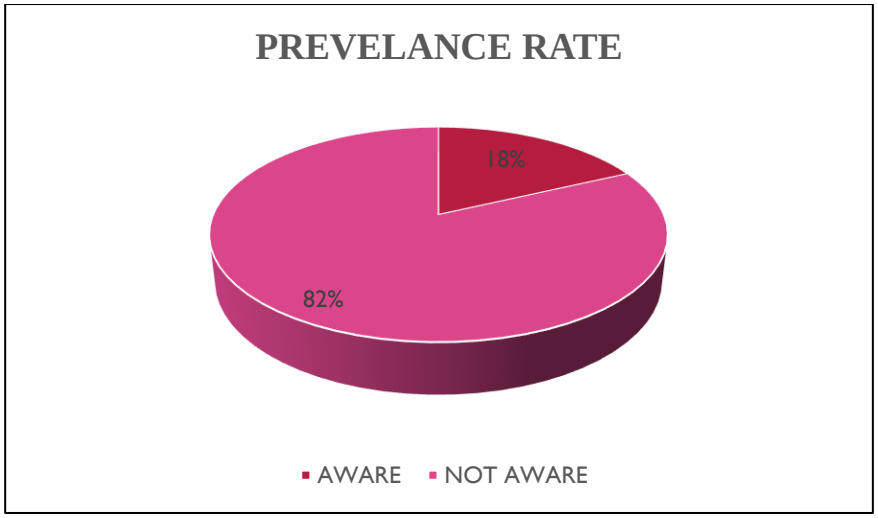

FIG 2: Shows the percentage of prevalence rate

4. RESULTS

Among the 150 participants, 114 (76%) reported experiencing shoulder pain. Among these, 48 individuals (42.1%) had symptoms consistent with frozen shoulder, including significant restriction in shoulder movement. Despite the high prevalence, only 27 (18%) participants were aware of frozen shoulder as a potential complication of diabetes. Among those experiencing shoulder pain, only 35% had sought medical consultation, and many resorted to self-medication or home remedies.Out of the 150 participants, 92 (61.3%) were female and 58 (38.7%) were male. Among those affected by shoulder pain, 76 out of 98 females (82.6%) reported experiencing shoulder pain, while 38 out of 52 males (65.5%) reported shoulder pain. This indicates that shoulder pain is more prevalent among females than mas in this population, with an overall prevalence of 76% among participants with T2DM.

5. DISCUSSION

Frozen shoulder can lead to significant impairment in shoulder mobility and function[10]. The pathology involves a progressive thickening and contractures of the shoulder capsule, which restrict movements, especially rotation away from the midline along a vertical axis[11]. Patients commonly report persistent pain, especially at night, and difficulty performing daily activities, making it a chronic condition with a potentially long recovery period of up to 3 years[12,13]. Contrary to the belief that it is self-limiting, many patients continue to experience symptoms without timely and appropriate intervention[14].

A key observation from this study is the remarkably low awareness of frozen shoulder among participants, despite its high occurrence[15]. This lack of awareness may contribute to delayed diagnosis and treatment, exacerbating the condition and leading to long-term disability. Many participants did not seek medical advice, opting instead for self-medication or non-medical interventions, further highlighting the need for improved patient education. Given that early intervention, including physiotherapy and controlled blood glucose levels, can mitigate symptoms and improve functional outcomes, raising awareness is crucial. Healthcare providers should incorporate musculoskeletal assessments into routine diabetes care and educate patients about the risks and early signs of frozen shoulder[16,17,18].

Literature evidence shows correlation between diabetes mellitus and frozen shoulder, with diabetic patients having a greater odds of developing the condition compared to the general population[19,20,21].

While some research suggests a higher incidence of frozen shoulder in insulin-dependent patients, recent meta-analyses have not found significant differences between insulin-dependent and non-insulin-dependent individuals[7,16,22]. Additionally, while frozen shoulder is predominantly unilateral, it has been observed that 68% of bilateral cases occur in diabetic patients, indicating a strong link between diabetes and this condition.[17]

6. CONCLUSION

Shoulder pain is prevalent among individuals with T2DM, with a considerable proportion experiencing symptoms of frozen shoulder. However, awareness about this condition is low, emphasizing the necessity for educational initiatives and early intervention strategies. Healthcare providers should incorporate musculoskeletal assessments in routine diabetes management to enhance early detection and treatment.

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All authors equally contributed.

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