

A Preliminary Investigation of MDT Efficacy in Controlled and Uncontrolled Diabetic Frozen Shoulder

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ABSTRACT

Introduction: Adhesive Capsulitis (AC) is frequently associated with diabetes mellitus, attributed to increased glycosylation of collagen fibres in the shoulder joint capsule. Exercise-based interventions remain the primary treatment; however, the role of Mechanical Diagnosis and Therapy (MDT) in diabetic AC has not been widely investigated.

Aim: To determine the effectiveness of MDT in the assessment and management of AC among patients with controlled and uncontrolled diabetes.

Materials and Methods: Patients clinically diagnosed with diabetic AC by a physician or orthopaedician were recruited and allocated into two parallel groups: controlled diabetes (HbA1c <7) and uncontrolled diabetes (HbA1c >7). Participants were assessed using MDT principles and classified into derangement or articular dysfunction syndromes, followed by individualised interventions based on movement responses. Outcome measures included pain (Visual Analogue Scale, VAS), shoulder Range of Motion (ROM), and functional status (Upper Extremity Functional Index, UEFI), assessed at baseline, and at 2, 6, and 10 weeks.

Results: Baseline demographics and outcome measures did not significantly differ between groups, except for Glycosylated Haemoglobin (HbA1c), which was significantly higher in the uncontrolled group ($p < 0.001$). Significant time effects were observed for VAS, ROM, and UEFI ($p \leq 0.002$). Group effects were significant for abduction ROM ($p = 0.013$) and UEFI ($p = 0.025$), while no significant time \times group interaction was found. Post hoc analysis revealed significant improvements between baseline and week 2, and baseline and week 10, for VAS, ROM, and UEFI ($p \leq 0.05$). Additional improvements were noted between weeks 2 and 6 for flexion, external and internal rotation, and UEFI ($p \leq 0.029$), and between weeks 6 and 10 for VAS, flexion, internal rotation, abduction, and UEFI ($p \leq 0.024$).

Conclusion: MDT is effective in reducing pain and improving ROM in both controlled and uncontrolled diabetic AC. Functional outcomes, however, improved more significantly in patients with controlled diabetes, highlighting the role of glycaemic status in rehabilitation outcomes.

Keywords: Adhesive capsulitis, Diabetes mellitus, Glycaemic control, Mechanical Diagnosis and Therapy, Rehabilitation

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