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Mulligan Mobilization Combined with Conventional Therapy vs. Conventional Care Alone in Patients with Rotator Cuff Disease: A Systematic Review and Meta-Analysis of Randomized Controlled Trials**Abdulmuhsen Al-Qallaf**

Kuwait institute for medical specializations, Kuwait

Background/Objectives: Rotator cuff disease (RCD) is one of the most common causes of shoulder dysfunction, often resulting in pain, limited range of motion (ROM), and reduced function. Mulligan Mobilization with Movement (MWM) has been proposed as an effective adjunct to conventional therapy by correcting positional faults and improving joint mechanics. However, the overall evidence in RCD remains inconclusive. This meta-analysis aimed to evaluate the efficacy of Mulligan mobilization combined with conventional therapy versus conventional therapy alone on pain, functionality, ROM, joint position sense, and quality of life (QoL) in patients with RCD.

Methods: A comprehensive literature search was carried out in PubMed, Web of Science, Scopus, and the Cochrane Library from database inception to 12 October 2025, with no restrictions on publication year. We included randomized controlled trials (RCTs) that compared Mulligan mobilization combined with conventional therapy against conventional therapy alone in individuals with rotator cuff-related pain. The predefined outcomes were pain intensity, range of motion (ROM), quality of life (QoL), joint position sense, and functional performance. All statistical analyses were conducted using R version 4.3.1. Heterogeneity was assessed using the I² statistic and the Cochrane Q test. Pooled mean differences (MDs) were calculated using the Inverse Variance approach with a restricted maximum-likelihood (REML) random-effects model. The review protocol was prospectively registered in PROSPERO (ID: CRD420251166854). Results:

Four RCTs met the eligibility criteria and were included in the metaanalysis, comprising a total of 160 participants. Of these, 80 (50%) received Mulligan mobilization in combination with conventional therapy (mean age: 51 years; mean proportion of females: 45%). In the pooled analysis, Mulligan mobilization significantly improved pain at rest (MD -1.19; 95% CI [-1.64; -0.74]; $p = 0.01$; $I^2 = 0\%$), pain during activity (MD -2.25; 95% CI [-3.18; -1.31]; $p = 0.01$; $I^2 = 67\%$), functionality (MD -14.71; 95% CI [-20.10; -9.33]; $p = 0.01$; $I^2 = 51\%$), ROM (MD 19.92; 95% CI [11.25; 28.39]; $p = 0.01$; $I^2 = 58\%$), and joint position sense (MD -3.31; 95% CI [-6.22; -0.40]; $p = 0.03$; $I^2 = 80\%$) compared with conventional therapy alone. No significant difference was observed for QoL (MD 10.58; 95% CI [-3.18; 24.34]; $p = 0.13$; $I^2 = 76\%$). Conclusions: Mulligan mobilization combined with conventional therapy provides significant improvements in pain, functionality, ROM, and joint position sense in RCD. However, no statistically significant differences were observed in QoL between the groups. Integration of this technique into rehabilitation protocols may enhance clinical outcomes and functional recovery.

Biography

Abdulmuhsen Al-Qallaf is a distinguished medical professional affiliated with the Kuwait Institute for Medical Specializations (KIMS), Kuwait City, Kuwait. He is actively involved in postgraduate medical education and professional training, contributing to the advancement of healthcare through clinical excellence, academic development, and medical education. His work reflects a strong commitment to enhancing medical practice and supporting the growth of future healthcare professionals in Kuwait.