Multimodal approach to address the multifaceted nature of Chronic Musculoskeletal Disorders: Bridging the gap between research and clinical practice

Marwa Asim[1], Muhammad Ehab Azim[2], Furqan Ahmed Siddiqi[3], Farooq Azam Rathore[4]

Abstract

Musculoskeletal (MSK) disorders encompass various conditions impacting bones, muscles, tendons, ligaments, and nerves. An estimated 1.71 billion individuals globally have MSK disorders, causing disability and reduced quality of life. Literature contradicts the notion that musculoskeletal pain and disability solely arise from physical impairments; psychological, behavioural, and social factors contribute significantly. These facets influence pain perception and chronic impairment development. Common interventions—medication, exercise, manual and hydrotherapy, electro-thermal modalities, behavioural and alternative therapies—address pain individually, yet lack the comprehensive response required. In contrast, a multimodal approach combines diverse therapies tailored to individual needs. It ensures lasting symptom relief, prevents recurrence, and improves function. Although proven effective, clinical implementation of this approach remains limited. This mini-review discusses the reasons behind this gap, underscores multimodal approach importance, and enlightens rehabilitation professionals on its potential for managing chronic musculoskeletal issues.

MeSH Keywords: Humans, Musculosketal Pain, Quality of Life, Social Factors, Hydrotherapy, Complementary Therapies.

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Introduction

Musculoskeletal disorders (MSDs) are among the most prevalent and significant occupational health issues among working populations, having a significant negative influence on quality of life.[1] MSDs encompass a range of discomfort and disabling injuries, affecting the muscles, tendons, joints, bones, ligaments, nerves, cartilage and motor organs. Among these, commonly encountered conditions include low back pain, neck pain, osteoarthritis, rheumatoid arthritis, and gout, while other diverse conditions are grouped as "other MSK disorders". In the global landscape of health burdens, MSDs took the top spot in terms of years lost due to disability in 2017, ranking fifth in disability-adjusted life years (DALYs) among all diseases.[2] Chronic musculoskeletal disorders result in significant global burden, affecting approximately 1.71 billion people.[1]

The historical focus on physical deformities as the main cause of MSDs has shifted. Recent research highlights the intricate nature of these disorders, revealing that pain and disability experienced by those with MSDs are influenced by an amalgamation of physiological, psychological, behavioural, and social factors. These factors play a crucial role in shaping individuals' perceptions of pain and can contribute to the development of chronic impairment.[3]

The multifaceted nature of chronic musculoskeletal disorders arises from the intricate interaction between biological factors, which include structural changes, degeneration and inflammation within the musculoskeletal system.[4] The nature of musculoskeletal pain is primarily somatic, yet its presence does not exclude the possibility of other syndromes such as neuropathic or visceral pain syndromes. Almost everyone experiences musculoskeletal pain at some point in their life time, but persistent or recurrent pain, or other clinical symptoms of MSDs heightens the physical, psychological and socioeconomic impact of musculoskeletal pain. To make informed decisions, thorough initial evaluations must consider both medical and bio-psychosocial factors that contribute to the disorder's evolution, promising better outcomes.[5]

Strategies to manage chronic MSDs

Effectively mitigating the impact of chronic musculoskeletal disorders marked by debilitating pain calls for a strategic approach. Through the implementation of effective pain management strategies, it is possible to mitigate the negative impact of chronic musculoskeletal disorders and improve individuals' quality of life.[6] Within the vast expanse of literature, diverse guidelines converge on the significance of exercise as a fundamental

[1-3]Foundation University College of Physical Therapy, Foundation University Islamabad; [4]Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi, Pakistan.

Correspondence: Farooq Azam Rathore. e-mail: farooqrathore@gmail.com
ORCID ID: 0000-0002-4759-0453

component of therapeutic intervention for musculoskeletal disorders. For pain treatment, a variety of interventions including medication, physical therapy, occupational therapy, hydrotherapy, electro-thermal modality application, behavioral therapy, and alternative therapies emerge as important strategies to alleviate symptoms.[7]

Multimodal pain therapy (MPT) or functional restoration is a comprehensive multidisciplinary approach for pain management, which treats chronic pain as a biopsychosocial condition. Anchored in the biopsychosocial model, MPT interweaves medical treatment, exercise training and behavioural-psychological therapies, with outcome assessment in domains of biological, social and psychological aspects of pain. A multimodal approach allows for individualized treatment plans tailored to the unique needs and circumstances of each patient.[8] Extensive evidence underscores the absence of a one-size-fits-all solution for chronic musculoskeletal pain, compelling the integration of diverse therapies in a multimodal framework that consistently yields significant treatment effects.[9,10] This approach not only mirrors the intricate nature of pain but also empowers patients by offering a spectrum of therapeutic avenues. Beyond its clinical implications, this discourse reverberates through health systems and payer structures, spurring a paradigm shift towards more holistic and multifaceted approaches to the management of musculoskeletal pain.[11]

Gap between research and clinical practice

The disparity existing between research advancements and their integration within clinical practice, specifically concerning the multimodal approach to musculoskeletal disorders, highlights the failure to effectively translate research findings into routine patient care. While numerous research investigations have scrutinized the efficacy of the multimodal therapeutic approach, the absence of uniformity and comparability among study endpoints presents a considerable challenge in the direct comparison of intervention benefits. This inherent variability hampers the attainment of standardized protocols and thus impedes the progress of evidence-based clinical decision-making within the multimodal framework. While research findings are typically disseminated through scientific journals or conference platforms, the delay in knowledge propagation to healthcare professionals coupled with limited accessibility often results in a substantial lag in the application of the latest evidence-based practices within clinical contexts.[12]

Additionally, the intricate landscape of healthcare practitioners, each encompassing distinct scopes of practice, professional boundaries, and diverse perspectives stemming from their respective disciplines, contributes to the complexity of implementing multimodal therapy in a collaborative interdisciplinary manner. The discord in communication and coordination among healthcare professionals further adds an impediment to the effective implementation of multidisciplinary care.[13]

Other factors leading to a gap between research and clinical practice include lack of time and resources, as a multimodal care approach to MSDs would require additional time, organizational support and resources. Furthermore, the financial incentives required to sustain such multifaceted programmes might be inadequately addressed, rendering the continuity of these initiatives challenging.[14]

It has also been observed that there is a wide variability in the practices of clinicians, marked by inconsistent integration of evidence-based approaches. This variance, in turn, contributes to the persistent gap between research findings and their application in patient care.[13] In certain instances, healthcare professionals devise treatment regimens that amalgamate diverse interventions, guided by their personal inclinations, preferences, beliefs, training and knowledge of the available evidence. While randomised controlled trials commonly assess the efficacy of individual interventional techniques in comparison to others, the translatability of these findings to real-world clinical scenarios can be limited. Hence, understanding the efficacy of multimodal care and inclusion of only evidence-based modalities for management of MSK disorders is crucial for guidance in clinical practice and provision of best available care to the patients.[15] There may also be inadequate strategies or framework in place which can expedite the translation of research findings into clinical practice. Effective implementation strategies are required in order to overcome the barriers and promote the adoption of evidence based practices for comprehensive management of musculoskeletal disorders.[16]

A multimodal approach involving various methods of treatment offer several benefits to the society. A multimodal approach to treat MSK pain may be extremely efficient in Pakistan, where healthcare is already limited and overly burdened. It can significantly enhance patient outcomes, shorten recovery time, improve efficiency of rehabilitation centres and help lessen the burden on healthcare system.

A multidisciplinary approach in pain management (syn. multimodal pain therapy (MPT) or functional restoration) addresses chronic pain as a bio-psycho-social condition and consists of physical exercises, a behavioural-psychological principle and medical intervention.

Conclusion

A multimodal strategy not only offers long-lasting symptom alleviation but also works to prevent and lessen the likelihood of future recurrence of musculoskeletal problems. Despite the increasing prevalence of musculoskeletal disorders and chronic pain, and literature indicating effectiveness of multimodal approach in managing pain and improving function, there is still a lack of its implementation in different clinical settings. Recognition of the holistic character of pain and significance of multimodal approach for chronic MSDs, is crucial for effectively addressing the multifaceted nature of these conditions. Integration of pharmacological and non-pharmacological interventions, along with patient education and multidisciplinary collaboration, can improve the quality of life of patients with MSDs and enhance patient outcomes.

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