Musculoskeletal pain

Musculoskeletal pain can be caused by disorders of bones, joints, muscles, tendons, ligaments, bursae, or a combination. Injuries are the most common cause of pain.

Bone pain is usually deep, penetrating, or dull. It commonly results from injury. Other less common causes of bone pain include bone infection (osteomyelitis), endocrine disorders, and tumors.

Muscle pain (known as myalgia) is often less intense than bone pain but can be very unpleasant. For example, a muscle spasm or cramp (a sustained painful muscle contraction) in the calf is an intense pain that is commonly called a charley horse. Pain can occur when a muscle is affected by an injury, loss of blood flow to the muscle, infection, or a tumor.

Tendon and ligament pain is often less intense than bone pain. It is often described as “sharp” and is worse when the affected tendon or ligament is stretched or moved and is usually relieved by rest. Common causes of tendon pain include tendinitis, tenosynovitis, lateral or medial epicondylitis, and tendon injuries. The most common cause of ligament pain is injury (sprains).

Bursae, small fluid-filled sacs, provide a protective cushion around joints. Pain in a bursa can be caused by trauma, overuse, gout, or infection. Usually, pain is worse with movement involving the bursa and is relieved by rest. The affected bursa may swell.

Joint pain (called arthralgia) may or may not be related to joint inflammation (called arthritis). Arthritis may cause swelling as well as pain. A wide variety of disorders can cause arthritis, including inflammatory arthritis (such as rheumatoid arthritis), osteoarthritis, infectious arthritis, gout and related disorders, autoimmune and vasculitic disorders (such as systemic lupus erythematosus and Henoch-Schönlein purpura), osteonecrosis, and injuries affecting the part of a bone inside a joint. Arthritic pain can be new (acute, for example, when caused by infections, injuries, or gout), or longstanding (chronic, for example, when caused by rheumatoid arthritis or osteoarthritis). Pain resulting from arthritis is typically worse when the joint is moved but usually is present even when the joint is not being moved. Sometimes pain originating in structures near the joint, such as ligaments, tendons, and bursae, seems to be coming from the joint.

Fibromyalgia (see Fibromyalgia) may cause pain in the muscles, tendons, or ligaments. The pain is usually experienced or causes tenderness in multiple locations and may be difficult to describe precisely but is usually not coming from the joints. Affected people usually have other symptoms, such as fatigue and poor sleep.

Some musculoskeletal disorders cause pain by compressing nerves. These conditions include the tunnel syndromes (for example, carpal tunnel syndrome—see Carpal Tunnel Syndrome, cubital tunnel syndrome—see see Cubital Tunnel Syndrome, and tarsal tunnel syndrome—see Tarsal Tunnel Syndrome). The pain tends to radiate along the path supplied by the nerve and may be burning. It is usually accompanied by tingling, numbness, or both.

Sometimes, pain that seems to be musculoskeletal is actually caused by a disorder in another organ system. For instance, shoulder pain may be caused by a disorder affecting the lungs, spleen, or gallbladder. Back pain may be caused by a kidney stone, abdominal aortic aneurysm, inflammation of the pancreas, or, in women, pelvic disorders. Arm pain may be caused by a heart attack (myocardial infarction).

Treatment

Current United States practice guidelines suggest an initial “wait and see” approach following the onset of musculoskeletal pain, particularly for spinal pain.

Treatment for musculoskeletal pain may include medications, physical therapy, exercises, and in some cases, surgery. Self-care measures such as maintaining a healthy weight, getting regular exercise, and using proper posture and body mechanics can also help reduce the risk of developing musculoskeletal pain.

Digital care programs (DCPs) for musculoskeletal pain management have risen as alternative care delivery models to circumvent challenges in the accessibility of conventional therapy. Despite the potential of DCPs to reduce inequities in accessing care, the outcomes of such interventions in rural and urban populations have yet to be studied.

The aim of the study was to assess the impact of urban and rural residencies on engagement and clinical outcomes after a multimodal DCP for MSK pain.

The study consists of an ad hoc analysis of a decentralized single-arm investigation into engagement and clinical-related outcomes after a multimodal DCP in patients with MSK conditions. Patients were coded according to their zip codes to a specific rural-urban commuting area (RUCA) code, and grouped into rural and urban cohorts. Their engagement, as well as clinical outcome, changes from baseline to program end were assessed. Latent growth curve analysis was performed to estimate change trajectories adjusting for the following covariates: age, gender, body mass index, employment status, and pain acuity. Outcomes included engagement, self-reported pain, Generalized Anxiety Disorder 7-item scale, Patient Health Questionnaire 9-item, and Work Productivity and Activity Impairment. A minimum clinically important difference (MCID) of 30% was considered for pain.

Patients from urban and rural residencies across the U.S. participated in the program (N= 9992). A 73.8% completion rate was observed. Both groups reported high satisfaction scores and similar engagement with exercise sessions, with rural residents showing higher engagement with educational content (P<.001) and higher program completion rates (P=.02). All groups showed a significant improvement in all clinical outcomes without inter-group statistical significance, including pain, mental health and work productivity. The percentage of patients meeting the MCID was similar in both groups (urban: 67%, rural: 68.7%, P=.24).

This study advocates for the utility of a DCP in improving access to MSK care in urban and rural areas alike, showcasing its potential to promote health equity. High engagement, satisfaction, and completion rates were noted in both groups, as well as significant improvements in clinical outcomes [1)].

1)

Scheer J, C Areias A, Molinos M, Janela D, G Moulder R, Lains J, Bento V, Yanamadala V, Dias Correia F, Costa F. Engagement and utilization of a complete remote digital care program for musculoskeletal pain management in urban and rural areas across the United States: Longitudinal Cohort Study. JMIR Mhealth Uhealth. 2023 Feb 2. doi: 10.2196/44316. Epub ahead of print. PMID: 36735933.