

Appendix 1: Objectives, methods, results and suggestions of the included articles.

		Objective	Methods	Results	Suggestions
Management of Musculoskeletal Pain: Na Update with Emphasis on Chronic Musculoskeletal Pain ²	Salah N El-Tallawy 2021	To optimize musculoskeletal pain (MSP) management: -identifying gaps -targeting vulnerable groups -improving treatment effectiveness and quality of life (QoL).	A comprehensive literature search was conducted in PubMed, MEDLINE, and Embase using keywords related to musculoskeletal pain and its management.	The management of chronic MSP requires a hierarchical approach, beginning with conservative treatments, followed by pharmacological options if needed, and progressing to minimally invasive procedures when pain persists.	A holistic approach, recommending lifestyle adjustments, psychological support and emphasizes the importance of shared decision-making to ensure personalized and effective pain management.
The Impact of Chronic Pain, Stiffness and Difficulties in Performing Daily Activities on the Quality of Life of Older Patients with Knee Osteoarthritis ¹	Agata Wojcieszek 2022	Evaluation of how joint pain, stiffness, and functional limitations associated with knee osteoarthritis (KOA) affect the QoL in individuals entering old age.	Cross-sectional study using validated scales (WOMAC, Lequesne Index, WHOQOL-BREF) and a self-developed questionnaire, analyzing data from 300 participants aged 60–74, comparing KOA and non-KOA groups.	Patients with gonarthrosis face significant physical limitations, particularly in daily activities, with factors like male gender, older age, and higher BMI contributing to more severe symptoms and a lower QoL compared to those without lower limb issues.	The importance of educating patients on pain management, promote non-pharmacological interventions and assess QoL in older adults as a preventive measure against age-related health issues.
The influence of pain-related comorbidities on pain intensity and pain-related psychological distress in patients presenting with musculoskeletal pain ¹⁶	Steven L. Spoonmore Jr 2023	To investigate the relationship between recent care-seeking for pain-related comorbidities, pain intensity at the start of physical therapy for MSP, and its association with psychological distress.	Longitudinal cohort study to examine MSP conditions, considering patient demographics, pain-related comorbidities, and prior medical history, while assessing pain intensity using the Numeric Pain Rating Scale (NPRS) and psychological distress through the OSPRO-YF 10.	Depression was the only pain-related comorbidity linked to higher pain intensity, while no comorbidities were associated with psychological distress. Female sex appeared to have a protective effect against psychological distress.	Clinicians should assess the impact of comorbid depression, symptom location, and other factors on pain intensity during the initial consultation for patients with MSP conditions.
What is new in classification, diagnosis and management of chronic musculoskeletal pain: a narrative review ⁹	Jiejie Zhuang 2022	To provide an updated overview of chronic MSP by examining its classification, diagnosis, and management, with a focus on recent advances	The study reviews literature on chronic MSP, including the latest classification under ICD-11, diagnostic protocols, assessment methods, and therapeutic approaches, incorporating both	Chronic MSP significantly impacts QoL and is influenced by multiple factors. Diagnostic protocols were reviewed, covering pain intensity evaluation (NRS, VAS, Mc Gill Questionnaire, etc), psychological	The authors emphasize the need for integrated, multidisciplinary treatment approaches and further research on innovative therapies.

		in treatment and research.	pharmacological and non-pharmacological strategies.	assessment, functional status (SF-36, WOMAC, NMQ), and central sensitization.	
Impact of Chronic Pain on Patients' Quality of Life: A Comparative Mixed-Methods Study ⁴	Muhamad Abdul Hadi 2019	To evaluate and examine how chronic pain affects patients' QoL through both quantitative and qualitative data.	Mixed-methods approach, combining independent quantitative data via "The Brief Pain Inventory", "Hospital and Depression Scale", "SF-36v2" and "Chronic Pain Grade questionnaire", and qualitative data via semi-structured interviews to assess chronic pain patients' QoL.	Chronic pain was most reported in the lower back and lower limbs, with significantly lower QoL scores across all SF-36 domains compared to the general population. Qualitative analysis identified six key themes: impact on physical function, professional life, relationships, social life, sleep, and mood.	Given the high prevalence of chronic pain and its significant negative effects, there is a need to develop more effective and efficient pain management services.
Treated as a number, not treated as a person': a qualitative exploration of the perceived barriers to effective pain management of patients with chronic pain ⁵	Muhamad Abdul Hadi 2017	To explore the challenges patients with chronic pain face in accessing effective pain management.	Secondary thematic analysis of semistructured interviews with 19 adult patients discharged from a pain clinic.	Barriers to effective pain management were categorized into issues related to healthcare professionals, including lack of empathy, limited specialized knowledge, and poor communication, and systemic challenges such as long waiting times, short consultations, and the absence of a multidisciplinary approach.	A holistic, biopsychosocial approach is essential for effectively managing chronic pain and improving patient satisfaction. Future research should focus on evaluating the feasibility, effectiveness, and cost-effectiveness integrated care models for managing chronic pain in primary care.
Opioids in the ambulatory setting in non-oncological pain: a review about the challenges of pharmacology in aging ⁷	Hugo Ribeiro 2021	To improve the understanding of the pharmacokinetic and pharmacodynamic properties of opioid drugs for non-oncological pain in Portugal, enabling more informed and tailored treatment	A narrative review using MeSH terms 'Analgesics, Opioid' and 'Pharmacology, Clinical,' the Summary of Product Characteristics for all opioids available in Portugal, and the pharmacokinetic and pharmacodynamic data from DrugBank.	-Basic pharmacology and patient characteristics are crucial for safe opioid prescribing; -Lipophilic opioids require adjusted doses in obese and elderly patients; -Morphine and hydromorphone need cautious titration in elderly or dehydrated patients.	-Need for further research in the area of chronic pain management; -Developing effective and safe pain management strategies based on solid evidence.

		choices to increase effectiveness and minimize adverse effects.		-Opioids with phase 1 metabolism may be more toxic in elderly and polypharmacy patients. -Hydromorphone, buprenorphine, and fentanyl are safer in renal impairment, while other opioids require dose adjustments.	
Chronic Pain in Musculoskeletal Diseases: Do You Know Your Enemy? ³	Roberto Bonanni 2022	-To summarize the prevalence and impact of musculoskeletal pain; -Explore its underlying pathophysiological mechanisms and understanding how to reduce chronicity and improve patient outcomes.	This narrative review analyzed 159 Medline-indexed papers published between 1945 and 2022, focusing on the impact of chronic pain in musculoskeletal disorders.	MSP significantly affects all aspects of life and it is becoming more prevalent, exposing the limitations of current treatment approaches. Many hospitals lack dedicated pain management centers, and interdisciplinary collaboration remains insufficient.	-Educating patients on pain mechanisms can prevent resignation to musculoskeletal pain; -Understanding the risks of untreated pain can encourage commitment to therapy; -A structured pain management cycle could serve as a foundation for effective treatment strategies.
What WOMAC Pain Score Should Make a Patient Eligible for a Trial in Knee Osteoarthritis? ⁴	Joyce Goggins 2005	To assess various WOMAC pain thresholds as eligibility criteria for a knee osteoarthritis trial and their impact on recruitment.	Subjects with knee pain were evaluated using the Likert WOMAC scale, scoring pain severity across five activities. Eligibility was tested using four different criteria to determine the number of qualifying participants.	The number of participants eligible for an OA trial is influenced by the WOMAC pain threshold set.	Increasing the threshold will slightly reduce the number of eligible participants, but will select more individuals experiencing moderate to severe pain. Decreasing the threshold, on the other hand, may lead to including individuals with only mild pain during activity.
Most Important Frequently Asked Questions From Patients With Hip or Knee Osteoarthritis: A Best-Worst Scaling Exercise ¹⁸	Aniek A. O. M. Claassen 2019	To identify and prioritize key Frequently Asked Questions (FAQs) from patients with hip or knee osteoarthritis (OA) and	FAQs from health care professionals and patients were collected, prioritized using maximum difference scaling, and analyzed with a hierarchical Bayesian approach and t-tests.	Sixty FAQs were prioritized, with the top question being "how to reduce symptoms and prevent OA progression?". Patients focused more on professional treatments, while professionals	To address patients' informational gaps beyond guidelines and developing unified answers to key FAQs to use in education and clinical practice.

		healthcare professionals.		emphasized self-management strategies.	
What influences chronic pain management? A best-worst scaling experiment with final year medical students and general practitioners ⁸	Linda Rankin 2019	To identify key factors influencing chronic pain management decisions among final-year medical students and General Practitioners (GPs) by analyzing their preferences using a best-worst scaling (BWS) experiment.	BWS was used to assess the key factors affecting chronic pain management decisions.	All cohorts prioritized patients' pain descriptions and treatment history in decision-making, while deeming demographics, facial expressions, and social factors were less important. Medical students and GPs showed strong agreement, with GPs emphasizing professional experience more.	Enhancing pain management education during undergraduate medical training.
Best worst discrete choice experiments in health: Methods and an application ¹⁵	Emily Lancsar 2012	To explore the relevance of BWDCEs in health research and how they can be used to address clinical issues.	The study applies BWDCEs to assess preferences of 898 people in Edmonton and Calgary for cardiac arrest treatment, comparing results with traditional analysis methods.	BWDCEs offer a more accurate understanding of preferences for cardiac arrest treatment compared to traditional first-best data analysis.	The authors suggest that BWDCEs are a valuable tool for health sector preference research and recommend further exploration in task design, analysis methods, and potential areas for future investigation.
Best--worst scaling: What it can do for health care research and how to do it ¹³	Terry N. Flynn 2006	To explain how BWS can address limitations of traditional DCEs, particularly in the context of health care research.	The paper explains how to design, aggregate, and analyze BWS data, using a QoL pilot study as an example.	BWS offers additional insights over traditional discrete choice experiments, making it particularly valuable for health services research.	
For better or worse? Investigating the validity of Best-Worst discrete choice experiments in health ¹⁷	Nicolas Krucien 2019	To evaluate the validity of the BWDCE approach.	An experimental design tests whether best and worst choices provide similar information about preferences, examining decision	The responses to "worst" choices are noisier, and preferences derived from "best" and "worst" choices differ qualitatively. BWDCE responses exhibit lower	To be cautious when using BWDCE as an alternative to the traditional "pick the best" DCE.

			determinants and consistency and it investigates the validity of excluding worst choices and treating best choices as standard DCE data.	consistency, with respondents more likely to rely on simplifying decision heuristics.	
Patient preferences for osteoarthritis pain and chronic low back pain treatments in the United States: a discrete-choice experiment ¹⁹	D. Turk 2020	To assess patient preferences for analgesic treatments for moderate-to-severe osteoarthritis and chronic low back pain, focusing on injectable nerve growth factor (NGF) inhibitors, NSAIDs, and opioids.	This study employed a DCE and BWS to assess patient preferences for osteoarthritis and chronic low back pain treatments.	Respondents prioritized symptom control, avoiding physical dependence, and preferring oral medication over injections, while being less concerned about risks of heart attack or joint problems. They were willing to accept some level of risk for better pain relief.	Patients generally prefer alternative pain treatments over opioids and would consider NGF inhibitors acceptable if they offer efficacy comparable to NSAIDs and opioids.
Experimental measurement of preferences in health and healthcare using Best-Worst scaling: an overview ¹²	Axel C. Muhlbacher 2016	To explore the use BWS as a method for measuring preferences in healthcare decision-making, analyzing its theoretical foundation, application, and implementation in different contexts.	A systematic literature review identified 53 studies using BWS in healthcare, categorizing them into three variants: object case, profile case, and multiprofile case. The study examined experimental design, data analysis, and the strengths and limitations of each approach.	BWS has been increasingly applied in healthcare, demonstrating advantages over traditional rating and ranking scales by providing more detailed preference data. Challenges such as cognitive burden, lexicographic preferences, and endogenous censoring were identified.	Future research should refine BWS methodology. Stated-preference data should be recognized as a crucial component of healthcare decision-making, emphasizing the need for greater awareness among physicians, researchers, and regulators to enhance patient-centered care and optimize health outcomes.

Note for abbreviations: MSP- Musculoskeletal Pain; QoL- Quality Of Life; KOA- Knee Osteoarthritis; NPRS- Numeric Pain Rating Scale; VAS- Visual Analog Scale; WOMAC- Western Ontario Osteoarthritis Index; SF-36- Short-Form-36; FAQs- Frequently asked questions; OA- Osteoarthritis; GPs- General Practitioners; BWS- Best Worst Scale; BWDCEs- Best Worst Discrete Choice Experiments; DCEs- Discrete Choice Experiments; NGF- Nerve Growth Factors; NSAIDs- Nonsteroidal Anti-inflammatory Drugs.