Bias in Musculoskeletal Pain Management and Bias-targeted Interventions to Improve:

Pain Outcomes: A Scoping Review

Bright Eze, BS, RN [Graduate Research Assistant],
University of Connecticut School of Nursing

Sumanya Kumar, BS,
University of Connecticut School of Medicine

Yuxuan Yang, BS, RN [Graduate Research Assistant],
University of Connecticut School of Nursing

Jason Kilcoyne [Research Assistant],
University of Connecticut School of Nursing

Angela Starkweather, PhD, ACNP-BC, CCRN, FAANP, FAAN [Professor, Associate Dean for Academic Affairs],
University of Connecticut School of Nursing

Mallory A. Perry, PhD, RN, CCRN [Postdoctoral Fellow]
Children's Hospital of Philadelphia Research Institute

Abstract

Bias in health care negatively impacts disparities in care, treatment, and outcomes, especially among minority populations. A scoping review of the literature was performed to provide a deeper understanding of how bias influences musculoskeletal pain and potential effects of bias-targeted interventions on reducing pain disparities, as well as identify gaps and make suggestions for further research in this area. Publications from peer-reviewed journals were searched using the databases, Pubmed/Medline, PsycInfo, CINAHL, and Scopus, with 18 studies identified. The literature review revealed that clinician-based bias and discrimination worsen pain and disability by reducing access to treatment and increasing patient pain-related injustice, catastrophizing, depression, and perceived stress. In contrast, clinician education and perspective-taking, patient decision-tools, and community outreach interventions can help to reduce bias and disparities in musculoskeletal pain outcomes. Increasing the diversity of the health care workforce should also be a priority. Models of care focused on health equity may provide an ideal framework to reduce bias and provide sustainable improvement in musculoskeletal pain management.

Corresponding Author: 231 Glenbrook Avenue, Storrs, CT, 06269; (804) 245-4742; (860) 486-0549; (860) 486-0001; angela.starkweather@uconn.edu.

INTRODUCTION

Musculoskeletal conditions, including low back/neck pain and osteoarthritis, are the most prevalent non-communicable health conditions globally, affecting over 1.7 billion people worldwide, and carry a high burden of pain, disability and health care costs (Safiri et al., 2021). Orthopaedic nurses and physicians play a significant role in developing and leading preventative interventions to reduce the risk of musculoskeletal pain and injuries, as well as implementing strategies to mitigate the impact on function and quality of life. However, numerous studies have shown that not all patients are given the same opportunities to manage their musculoskeletal pain, health, and functional outcomes (Gilmer & Buccieri, 2020; Morales & Yong, 2021). Disparities in the delivery of health care, patient experiences, and outcomes of patients with musculoskeletal conditions based on the individual's socioeconomic status, race, ethnicity, gender, sexual-orientation, age, citizenship status, and English-language proficiency have been noted over the past several decades (Burgess et al., 2006; Green & Hart-Johnson, 2012; Mossey, 2011). In order to more fully examine how bias influences musculoskeletal pain outcomes and the effects of bias-targeted interventions for improving equitable musculoskeletal pain management, a scoping review of the literature was performed. It was also a goal of the scoping review to identify research gaps and make suggestions for further research in this area.

Bias and the relationship with health disparities

Bias is a term used to describe a person's inclination for or against a person or group of people that can influence unfair treatment and can be described as positive/negative or explicit/implicit (Emerson et al., 2021). Stereotypes, or fixed assumptions that one has about a person or group of people based on a given characteristic can serve to rationalize biases and lead to discrimination (see Table 1 Glossary of Terms). Implicit bias among health care providers has been shown to affect decision-making in diagnosis and treatment, interpersonal communication, and patient trust (Zestcott, Blair, & Stone, 2016). Bias in health care has been linked to false beliefs about biological differences between racial and ethnic groups and variation in clinician empathy, and the magnitude of bias predicts the extent of health disparities (Morales & Yong, 2021).

Specific to pain management, Kasewater and colleagues (2012) reported a pro-White treatment bias by health profession students that was associated with the amount of empathy they had toward a Black or White patient with pain. Clinician bias in recognizing pain among minority patients, through facial expression or other verbal or non-verbal cues, has been shown to influence pain treatment decisions (Mende-Siedlecki et al., 2019). In addition, Hoffman and colleagues (2016) found that White physician residents and medical students who endorsed false beliefs about biological differences between Black and White people rated a Black patient's pain as lower and made less accurate treatment recommendations. In a recent review, Aronowitz and colleagues (2020) found that while treating pain, clinicians rated Black patients as having a higher risk for substance abuse, unlikely to follow medical advice and less intelligent than White patients, as well as more likely to have injuries associated with crime and violence. They also found that

clinician beliefs that Black patients feel less pain than their White counterparts affected pain treatment, patient trust, and relatability.

The impact of clinician-based bias on patient health

These clinician-based biases negatively impact the quality of pain management, treatment outcomes, health care experiences and patient biopsychosocial-spiritual health, especially among minority populations (Maina et al., 2018; Thames et al., 2019). For instance, Black patients with sickle cell disease (SCD) or cancer reported perceived bias from healthcare providers as reflected by delayed treatment and lack of communication (Dyal et al., 2019). Individuals with SCD were also confronted with accusations of drug-seeking behavior, perceived mistreatment, and feelings of not being heard or believed. Discrimination in health-care settings has been associated with greater SCD-related pain, sensitivity to pain, stress, depression and sleep disturbance (Mathur et al., 2016). Particularly for Black men affected by traumatic injuries, assumed criminality associated with their injuries can lead to decreased empathy and increased concern of opioid misuse among health care clinicians, which ultimately affect the quality of care provided (Aronowitz et al., 2020).

While numerous publications have documented the existence of health disparities among minority populations (Doan Van et al., 2019; Mattocks et al., 2020), we were interested in understanding the ways in which bias affects musculoskeletal pain management and outcomes. The main questions guiding the scoping review were:

- In what ways does bias and discrimination influence the outcomes of musculoskeletal pain management?

- What interventions have been examined to reduce bias and discrimination in the management of musculoskeletal pain?

METHODS

The current literature review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021) extension for scoping reviews (Tricco et al., 2018).

Literature Search

A literature search, review of abstracts, quality appraisal, and abstraction of data were conducted by the authors. Publications from peer-reviewed journals were searched using the databases Pubmed/Medline (n=286), PsycInfo (n=211), CINAHL (n=55), and Scopus (n=132) using the terms: *bias or prejudice or discrimination AND pain management or pain relief or pain reduction AND musculoskeletal pain* with filters placed for studies published between 2016 to the present (Figure 1). Inclusion criteria included: (1) research studies focused on identifying how health care clinician bias and discrimination or bias-targeted interventions (patient and/or provider-level) influence musculoskeletal pain management and/or patient outcomes of all age groups; (2) all types of quantitative study designs or secondary analyses; and (3) published in English between January 1, 2016 to August 1, 2021. This period of time was chosen to reflect the most recent findings regarding

disparities in musculoskeletal pain management and evaluation of interventions to reduce bias. Exclusion criteria included: (1) abstracts, case-reports, review articles or publications from non-peer-reviewed sources; (2) research studies focused on efficacy or effectiveness of a specific type of pain treatment; or (3) research involving individuals with neuropathic pain or that did not focus on musculoskeletal pain. The literature review was carried out between May to August 30, 2021 and abstracts screened by two independent raters (B.E., A.S.) regarding the inclusion and exclusion criteria described above. Articles in which the criteria were met were retained for full-text screening and discrepancies between the reviewers were resolved by a third author (M.P.).

Articles that passed the full-text screening were critically appraised using the Joanna Briggs Institute Quality Appraisal Tool for Randomized Clinical Trials, Quasi-Experimental Studies, Cohort Studies, and Analytical Cross-Sectional Studies (Joanna Briggs Institute, 2020). Data was extracted from each article that had a quality assessment score $\geq 60\%$, which reflects minor to moderate quality concerns (Supplemental Digital Content Table 2: Quality Assessment and Data Extraction from Studies that Examined the Impact of Bias on Musculoskeletal Pain Outcomes, and Table 3: Quality Assessment and Data Extraction from Studies that Evaluated the Effects of Bias-Targeted Interventions). Data was extracted into a spreadsheet for study characteristics including the purpose, study design and sample, study measures, and main findings.

Results

In total, 13 articles were identified that examined the impact of bias on musculoskeletal pain outcomes (Supplemental Digital Content Table 2) and 5 articles examined the effects of a bias-targeted intervention on pain outcomes (Supplemental Digital Content Table 3). All of the studies were conducted in the United States and data included results from 948,299 participants or medical charts from youth to older adults and 881 clinicians or students. Pain conditions included hip and knee osteoarthritis and low back pain. Study designs included prospective cross-sectional (n=6), longitudinal (n=2), randomized controlled trials (n=2), lens model (n=1), secondary analysis (n=5) and retrospective (n=2).

Several studies examined the effects of experienced discrimination on pain and disability (Dugan et al., 2017; Miller et al., 2021; Terry et al., 2020; Trost et al., 2019, & Ziadni et al., 2020). Experienced discrimination predicted worse pain and disability among racial and ethnic minority women (Dugan et al., 2017), while perceived stress and pain catastrophizing were found to mediate the relationship between discrimination and pain outcomes in Black women (Terry et al., 2020). Prior discrimination was positively associated with depression and disability among participants with chronic pain (Ziadni et al., 2020)

Pain-related injustice predicted worse quality of life in youth with chronic pain (Miller et al., 2021) and worse pain among Black participants who were also found to report significantly higher levels of perceived injustice, depression, and pain-related disability compared to Hispanic and Non-Hispanic White (NHW) participants (Trost et al., 2019). Discrimination and perceived injustice were significantly higher among Black and Hispanic participants compared to NHWs (Ziadni et al., 2020).

Two studies examined how health care provider-patient racial and/or ethnic concordance or discordance affected musculoskeletal pain and care decisions in simulated group activities or clinical vignettes (Anderson et al., 2020; Guillermo & Barre-Hemingway, 2020). Anderson and colleagues (2020) found that provider-patient racial concordance reduced self-reported and physiological pain among Black participants, especially those with current worry about discrimination, whereas concordance increased self-reported pain among Hispanic participants.

Provider bias also reduced access to pain treatments among minority patients, which could influence disparities in pain outcomes. Guillermo and Barre-Hemingway (2020) found that opioid analgesic prescription for acute pain was more strongly associated with provider-patient racial concordance versus discordance. Another study that used simulated patients with videos and vignettes examined the provider's risk assessment based on patient race and prior opioid misuse behaviors (Hirsh et al., 2020). They found that providers rated Black compared to NHW patients as well as those with prior opioid misuse behaviors as having a higher risk for future opioid abuse/misuse.

Differences in pain assessment and the ways in which assumed protective factors influence pain were also investigated. In a retrospective study, Morris and colleagues (2021) found that Black and Hispanic residents were less likely to have pain behaviors documented or to receive analgesics compared to NHW residents. Morais et al. (2021) found that higher levels of gratitude and trait resilience were protective against movement-evoked pain among NHW participants however, gratitude was associated with lower functional performance in Black participants.

Three studies identified focused on modifying provider bias in musculoskeletal pain management. A decision tool consisting of an informational video and written information about total knee replacement (TKR) surgery for Black patients was developed and tested with the aim of reducing disparities in TKR recommendation and patient decisions to undergo surgery (Ibrahim et al., 2017). The participant group exposed to the intervention had a significant increase in the decision to undergo surgery, however provider recommendation for surgery remained unchanged. To address provider-based bias, Hirsch and colleagues (2019) tested an individually-tailored, virtual perspective-taking intervention designed to reduce provider-bias in the assessment and treatment of pain, specifically targeting race and low socioeconomic status (SES). They demonstrated that providers who received the tailored intervention had 85% lower odds of treatment bias toward Black patients and 76% lower odds of treatment bias toward low SES patients at follow-up. In contrast, an intervention study that relayed patient preference for opioid prescription and risk of opioid misuse to the provider in the emergency room found that Black patients were at lower odds of being discharged with an opioid compared to NHW patients (Engel-Rebitzer et al., 2021).

A community-based intervention developed to promote physical activity behavior change among obese Black and Hispanic/Latina women with early-stage osteoarthritis was evaluated by Jones and colleagues (2018). While the intervention did not directly address bias from the health care establishment, the study was designed to engage women in

physical activity without experiencing the bias of focusing solely on weight loss. Increased physical activity among participants resulted in improved pain and functional scores. Griesemer et al. (2021) performed a secondary analysis of a randomized controlled trial that tested a phone-based culturally enhanced pain coping skills training (PCST) intervention for Black patients with symptomatic hip or knee osteoarthritis. They found a significant interaction between experienced discrimination and the experimental condition on depressive symptoms, suggesting that the intervention could significantly reduce depression in patients who have experienced discrimination associated with their musculoskeletal pain.

Discussion

Bias negatively impacts musculoskeletal pain outcomes, especially among minorities

The first question of this scoping review was focused on examining the ways in which bias and discrimination influence musculoskeletal pain management. Based on the literature review findings, clinician-based bias and discrimination were found to negatively influence patient pain and disability by reducing access to pain treatment and increasing patient pain-related injustice, catastrophizing, and perceived stress (Dugan et al., 2017; Penn et al., 2020; Terry et al., 2020). Of particular importance, experiences of prior discrimination and perceived pain-related injustice also contributed to worse pain, depression, and disability (Miller et al., 2021; Trost et al., 2019; Ziadni et al., 2020).

These findings highlight the importance of addressing patient discrimination experiences when presenting for pain management, and for taking the time to affirm patient perceptions. While this may be viewed by clinicians as going beyond the usual methods of pain assessment, the experience of pain is multifactorial and influenced by one's lived experiences (Wallace et al., 2021). This is also an important step toward building trust and may provide insights on practice or system-level changes that are needed to reduce bias. Interventions to reduce the negative impact of pain-related injustice, catastrophizing and perceived stress are also important. Pain catastrophizing is one of the strongest psychological predictors of pain outcomes, and interventions to modify the degree of pain catastrophizing have been evaluated (Schutze et al., 2018). Overall, cognitive behavioral therapy showed the best evidence among studies with the highest quality of evidence, whereas multimodal treatment had the strongest effect when all studies were considered.

Provider-patient racial discordance can increase bias and suboptimal pain outcomes

Other studies found that discordant provider-patient race increased the risk of suboptimal pain management and identified specific patient populations, including those with previous opioid misuse behaviors, who are at greater risk of experiencing bias and discrimination in this situation (Anderson et al., 2020; Guillermo & Barre-Hemingway, 2020; Hirsh et al., 2020; Miller et al., 2021). There are several points to address in these findings which could help to inform future interventions directed toward reducing bias and discrimination in musculoskeletal pain management.

In the acute care setting, patients often do not have a choice on who delivers their care. However, it should be a priority to assess the experiences of patients and families, their perception of safety, trust, perceived discrimination, and interactions with the health care team as well as develop ways to improve patient-centered outcomes. Education for current and future health care clinicians on using de-biasing and inclusive approaches to musculoskeletal pain management, such as those entailed within cultural humility, mindfulness, and trauma-informed care, was one strategy supported by the reviewed research studies (Arif & Schlotfeldt, 2021). Ensuring that there is ample opportunity for learning musculoskeletal assessment and management skills with diverse patient populations, including non-verbal patients, was another education-based strategy identified in the literature. Increasing the racial and ethnic diversity of the pain management health care workforce was a long-term strategy identified by several publications, which could be facilitated by partnerships with academic institutions and professional organizations (Anderson et al., 2020; Miller et al., 2020).

Identifying disparate pain outcomes of minority populations is critical for preventing harm

Divergent racial and ethnic population-based outcomes to musculoskeletal pain interventions were also identified in the literature review; important findings for developing culturally-responsive musculoskeletal pain management. In a secondary analysis of the Adaptability and Resilience in Aging Adults (ARIAA) study Morais et al. (2021) found that higher levels of gratitude, a protective factor against movement evoked pain in NHWs, was associated with lower functional performance in Non-Hispanic Blacks (NHBs). This finding is in contrast with a double-blinded randomized clinical trial, Staying Positive with Arthritis (SPA), that tested the effects of an interventions focused on positive psychological skills (e.g. gratitude and kindness) among 180 NHW and 180 NHB veterans (Hausmann et al., 2018). This study found that the intervention did not significantly improve pain or function among either participant group compared to the control condition, which consisted of structured neutral activities. Identifying disparate population-based outcomes from interventional trials is particularly important prior to considering broader implementation because of potential harm that may occur to minority patients and families.

Clinician perspective-taking can reduce bias and increase empathy

The second question guiding the scoping review of the literature focused on interventions to reduce bias and discrimination in musculoskeletal pain management. The initial work of Drwecki et al. (2011) showed that a simple perspective-taking task, of asking provider participants to imagine how the sufferers are feeling and how the pain is affecting their lives, could eliminate racial disparities in both pain-related empathy and treatment recommendations. Supporting this finding, Hirsh and colleagues (2019) demonstrated that a perspective-taking task did reduce bias in pain decision-making and increased compassion among a group of physician residents and fellows. Future work needs to validate these findings in practice settings and determine the effects on pain outcomes among other minority and/or nonconforming patient populations. Additionally, other modalities for addressing the effects of experienced discrimination should be considered for patients with musculoskeletal pain, such as the phone-based culturally enhanced pain coping skills

training (PCST), which reduced the effects of experienced discrimination on depression (Griesemer et al., 2021).

Patient decision-tools may reduce inequities in treatment for musculoskeletal pain

In comparison to other racial and ethnic groups, Black individuals have higher rates of high-impact osteoarthritis but lower rates of undergoing knee procedures, such as total knee arthroplasty, resulting in investigations to determine why disparities in surgical rates exist. While patient preference has been one factor identified, variance in the option for surgery has been shown to be a larger issue that affects some minority populations more than others and is influenced by geographic region, socioeconomic and insurance status (Hausmann et al., 2017). A decision tool to assist Black patients in evaluating whether to undergo total knee replacement (TKA) resulted in a higher number of patients who underwent surgery but did not lead to a higher number of surgery recommendations (Ibrahim et al., 2017). Likewise, an intervention to provide information on patient preference and opioid misuse risk in the emergency department to providers did not change opioid prescribing patterns among clinicians (Engel-Rebitzer, 2021). These findings suggest that reducing bias at only the provider-level may not be an effective strategy for reducing inequities and may need to be targeted at structural barriers, such as insurance coverage or organizational policies.

Individual versus organizational level interventions for reducing bias

Overall, these studies suggest that preparing clinicians with the knowledge and skills of cultural sensitivity and perspective-taking is more effective than interventions that would be assumed to change clinician behavior in-the-moment, such as providing information on patient preferences. However, experts in the field of health equity warn that educational strategies are inadequate for producing sustainable changes of practice, and patient-targeted interventions to mitigate the effects of bias, discrimination, and racism, fail to address the underlying problem and place additional burden on affected patients (Blanchet Garneau et al., 2019). To that end, a multi-component and organizational-level intervention for primary care, *EQUIP - Research to Equip Primary Healthcare for Equity*, was implemented in two provinces of Canada (Browne et al., 2015) with the goal of implementing equity-oriented care. The intervention addressed structural inequities by providing staff education and practice facilitation to support organizational-level practice and policy changes. Although EQUIP has a broader health focus, the intervention could be tailored to address bias specific to musculoskeletal pain management.

Community outreach interventions for reducing bias and improving pain outcomes

Another avenue for addressing bias in musculoskeletal pain management identified in the literature was working with communities affected by bias during the management of their musculoskeletal health (Jones et al., 2018). Community-engaged outreach through strong partnerships with community leaders, members and organization can inform priorities of care and services, as well as assist to develop community-engaged activities that are beneficial for musculoskeletal health, such as increasing physical activity. Other research in the field of musculoskeletal pain health disparities has demonstrated the impact of social, economic, and political influences that impair optimal pain management and function. Thompson et al. (2019) found that NHB and NHW adults with or at risk of knee arthritis

who were living below the poverty line experienced the most severe knee pain and poorest physical function compared to those living above the poverty line. Findings such as these could inform outreach efforts and interventions for improving musculoskeletal outcomes.

Recently, Wallace and colleagues (2021) conduced a qualitative study that included participants living with pain from three groups known to experience high levels of inequities and structural violence in Canada: Indigenous people, refugees, and members of the LGBTQ community. The focus groups conducted identified themes about how pain is entangled with and shaped by patients' social identities, experiences of violence, trauma, discrimination, related mental health issues, and inadequate and ineffective health care. The EQUIP intervention, as described earlier, was developed to provide inequity-responsive care and integrates organizational strategies to enhance the capacity of the health care team and patients to address these critical issues (Browne et al., 2015). Similarly, understanding the experiences of patients affected by inequities in musculoskeletal pain management could inform the development of interventions at one's organization or practice.

Research gaps identified in the literature review

The literature review provided several avenues for reducing bias and improving musculoskeletal pain management that require further research. Provider training on recognition of implicit biases, as well as routine use of perspective-taking while interacting with patients affected by musculoskeletal pain should be further examined for effectiveness in clinical settings. Likewise, interventions for addressing the effect of bias and discrimination, such as enhancing pain coping skills, should be evaluated based on patient-centered outcomes. Working with communities within the catchment area of the health care organization who have been affected by bias and discrimination would help to inform priority areas and allocation of resources and services for improving musculoskeletal pain outcomes. The goals should be community-driven with ongoing dialogue and transparency between community and health care members.

There were few studies that examined bias in populations with musculoskeletal pain other than low back or knee pain, and few that included patients with comorbid pain conditions. The lack of any research to evaluate organizational and system-level interventions addressing bias and discrimination in musculoskeletal pain management was evident especially given the recognized inequities in patient outcomes across the United States and represents a high-priority area for future research. A theoretically-based approach for improving health equity in musculoskeletal pain management would help to direct a multifaceted approach to support sustainable organizational and system-level improvements that are responsive to inequitable patient outcomes (Browne et al., 2015).

In addition, there were very few studies that assessed bias in terms of the multiple-layers and cumulative effects that it can have on individuals. Discrimination against the various facets of identity (e.g., age, gender, race, ethnicity, citizenship) often coexist and can have a combined effect on minorities, particularly people of color, that is encapsulated in the theoretical framework of intersectionality (Crenshaw, 1989). Identifying the interactions among different facets of identity, the impact on the lived experiences of historically excluded people, and using the knowledge to inform action toward social justice and equity

are foci of intersectional research (Bailey et al., 2019). Although patients with pain continue to report perceived stigma related to their condition (Morales & Yong, 2021), no studies were identified that used intersectional theory to examine inequities in care or inform future interventions for addressing social justice and equity in musculoskeletal pain management.

Limitations

Due to the dearth of research in this area, we only restricted publications based on a quality appraisal score of 60% or above, which includes studies with moderate quality concerns in the study design or methods. Since the scoping review was focused on the synthesis of various lines of research in the field it was important to evaluate gaps that exist. However, each study should be considered with respect to the quality appraisal score.

Conclusion

Bias and discrimination affect musculoskeletal pain management outcomes at a biopsychosocial-spiritual level. A robust body of research has demonstrated the negative impact of provider-bias on Black patients and other minority populations with musculoskeletal pain. Additional research is needed to examine the intersectional nature of bias and system- to individual-level interventions aimed at eradicating bias across health care, and specifically in the management of musculoskeletal pain.

Supplementary Material

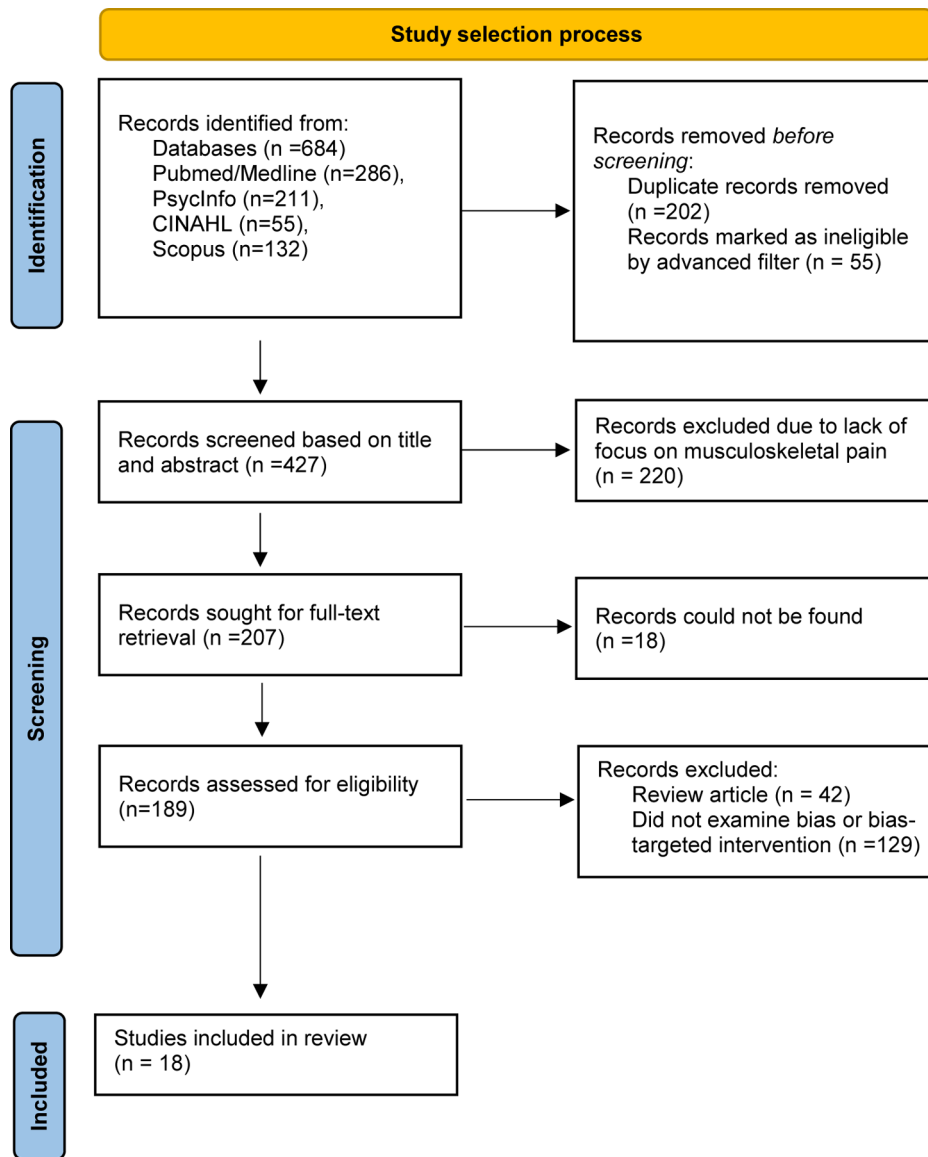Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

References

Anastas TM, Miller MM, Hollingshead NA, Stewart JC, Rand K,I, & Hirsch AT (2020). The unique and interactive effects of patient race, patient socioeconomic status and provider attitudes on chronic pain care decisions. Annals of Behavioral Medicine, 54, 771–782. doi:10.1093/abm/kaaa016 [PubMed: 32227158]

Arif SA, & Schlotfeldt J (2021). Gaps in measuring and mitigating implicit bias in healthcare. Frontiers in Pharmacology, 12, 633565. doi: 10.3389/pharm.2021.633565 [PubMed: 33815114]

Aronowitz SV, Mcdonald CC, Stevens RC, & Richmond TS (2020). Mixed studies review of factors influencing receipt of pain treatment by injured black patients. Journal of Advanced Nursing, 76, 34–46. doi: 10.1111/jan.14215 [PubMed: 31566791]

Bailey J, Steeves V, Burkell J, Regan Shade L, Ruparelia R, & Regan P (2019). Getting at equality: Research methods informed by the lessions of intersectionality. International Journal of Qualitative Methods, 18, 1–10. doi:10.1177/1609406919846753

Blanchet Garneau A, Browne AJ, & Varcoe C (2019). Understanding competing discourses as a basis for promoting equity in primary health care. BMC Health Services Research, 19, 764. doi: 10.1186/s12913-019-4602-3 [PubMed: 31660954]

Browne AJ, Varcoe C, Ford-Gilboe M, Wathen CN, & the EQUIP research team. (2015). EQUIP healthcare: An overview of a multi-component intervention to enhance equity-oriented care in

primary health care settings. International Journal for Equity in Health, 14, 152. doi: 10.1186/s12939-015-0271-y [PubMed: 26694168]

Burgess DJ, van Ryn M, Crowley-Matoka M, Malat J (2006). Understanding the provider contribution to race/ethnicity disparities in pain treatment: Insights from dual process models of stereotyping. Pain Medicine, 7(2), 119–134. doi:10.111/j.1526-4637.2006.00105.x. [PubMed: 16634725]

Crenshaw K (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. University of Chicago Legal Forum, 1(8), 139–167. doi: http://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

Doan Van EE, Mereish EH, Woulfe JM, Katz-Wise SL (2019). Perceived discrimination, coping mechanisms and effects on health in bisexual and other non-monosexual adults. Archives of Sexual Behaviors, 48(1), 159–174. doi:1.1007/s10508-018-1254-z

Drwecki BB, Moore CF, Ward SE, & Prkachin KM (2011). Reducing racial disparities in pain treatment: The role of empathy and perspective-taking. Pain, 152, 1001–1006. doi:10.1016/j.pain.2010.12.005 [PubMed: 21277087]

Dyal BW, Abudawood K, Schoppee TM, Jean S, Smith VM, Greenlee A, Staton LM, Duckworth L, Mandernach MW, Black V, Heldermon CD, Yao Y, Wilkie DJ, & Ezenwa MO (2021). Reflections of healthcare experiences of African Americans with sickle cell disease or cancer: A qualitative study. Cancer Nursing, 44(1), E53–E61. doi:10.1097/NCC.0000000000000750 [PubMed: 31743153]

Emerson AJ, Oxendine RH, Chandler LE, Huff CM, Harris GM, Baxter D, & Wonsetler Jones EC (2021). Patient and provider attitudes, beliefs, and biases that contribute to a marginalized process of care and outcomes in chronic musculoskeletal pain: A systematic review – part I: Clinical care. Pain Medicine, 0(0), 1–14. doi: 10.1093/pm/pnab195

Gilmer C & Buccieri K (2020). Homeless patients associate clinician bias with suboptimal care for mental illness, addictions and chronic pain. Journal of Primary Care & Community Health, 11, 1–7. doi:10.1177/2150132720910289

Green CR, & Hart-Johnson T (2012). The association between race and neighborhood socioeconomic status in younger black and white adults with chronic pain. Journal of Pain, 13(2), 176–186. doi:10.1016/j.pain.2011.10.008 [PubMed: 22248982]

Griesemer I, Hausmann LRM, Arbeeva L, Campbell LC, Cene CW, Coffman CJ, Keefe FJ, Oddone EZ, Somers TJ, & Allen KD (2021). Discrimination experiences and depressive symptoms among African Americans with osteoarthritis enrolled in a pain coping skills training randomized controlled trial. Journal of Health Care for the Poor and Underserved, 32(1), 145–155. doi:10.1353/hpu.2021.0014 [PubMed: 33678687]

Hausmann LRM, Youk A, Kwoh CK, Gallagher RM, Weiner DK, Vina ER, Obrosky DS, Mauro GT, McInnes S, Ibrahim SA (2018). Effect of a positive psychological intervention on pain and functional difficulty among adults with osteoarthritis. JAMA Network Open, 1(5), e182533. doi:10.1001/jamanetworkopen.2018.2533 [PubMed: 30646170]

Hausmann LRM, Brandt CA, Carroll CM, Fenton BT, Ibrahim SA, Becker WC, Burgess DJ, Wander LD, Bair MJ, & Goulet JL (2017). Racial and ethnic differences in total knee arthroplasty in the Veterans Affairs healthcare system (2001–2013). Arthritis Care & Research, 69(8), 1171–1178. doi:10.1002/acr.23137 [PubMed: 27788302]

Hoffman KM, Trawalter S, Axt JR, & Oliver MN (2016). Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. Proceedings of the National Academies of Science, 113(16), 4296–4301. doi:10.1073/pnas.1516047113

Kaseweter KA, Drwecki BB, & Prkachin KM (2012). Racial differences in pain treatment and empathy in a Canadian sample. Pain Research and Management, 17(6), 381–384. doi:10.1155/2012/803474 [PubMed: 23248809]

Maina IW, Belton TD, Ginzberg S, Singh A, & Johnson TJ (2018). A decade of studying implicit racial/ethnic bias in healthcare providers using the implicit association test. Social Science & Medicine, 199, 219–229. doi:10.1016/j.socscimed.2017.05.009 [PubMed: 28532892]

Mathur VA, Kiley KB, Haywood Jr., C. Bediako SM, Lanzkron S, Carroll P, Buenaver LF, Pejsa M, Edwards RR, Haythornthwaite JA, & Campbell CM (2016). Multiple levels of suffering: Discrimination in health-care settings is associated with enhanced laboratory pain sensitivity in

sickle cell disease. Clinical Journal of Pain, 32, 1076–1085. doi:10.1097/AJP.0000000000000361 [PubMed: 26889615]

Mattocks K, Casares J, Brown A, Bean-Mayberry B, Goldstein KM, Driscoll M, Haskell S, Bastian L, & Brandt C (2020). Women Veterans' experiences with perceived gender bias in U.S. Department Veterans Affairs specialy care. Womens Health Issues, 30(2), 113–119. doi:10.1016/j.whi.2019.10.003 [PubMed: 31735581]

Mende-Siedlecki P, Backer R, Qu-Lee J, & Van Bavel J (2019). Perception contributions to racial bias in pain recognition. Journal of Experimental Psychology: General, 148(5), 863–889. doi:10.1037/xge0000600 [PubMed: 31070440]

Morales ME, & Yong RJ (2021). Racial and ethnic disparities in the treatment of chronic pain. Pain Medicine, 22(1), 75–90. doi:10.1093/pm/pnaa427 [PubMed: 33367911]

Mossey JM (2011). Defining racial and ethnic disparities in pain management. Clinical Orthopaedics and Related Research, 469(7), 1859–1870. doi:10.1007/s11999-011-1770-9 [PubMed: 21249483]

Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffman TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hrobjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, McGuinness LA…Moher D (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. Systematic Reviews, 10, 89. 10.1186/s13643-021-01626-4 [PubMed: 33781348]

Safiri S, Kolahi A, Cross M, Hill C, Smith E, Carson-Chahhoud K, Ali Monsournia M, Almasi-Hashiani A, Ashrafi-Asgarabad A, Kaugman J, Sepidarkish M, Kazem Shakouri S, Hoy D, Woolf AD, March L, Collins G, & Buchbinder R (2021). Prevalence, deaths, and disability-adjusted life years due to musculoskeletal disorders for 195 countries and territories 1990–2017. Arthritis & Rheumatology, 73(4), 702–714. doi:10.1002/art.41571 [PubMed: 33150702]

Schutze R, Rees C, Smith A, Slater H, Campbell JM, & O'Sullivan P (2018). How can we best reduce pain catastrophizing in adults with chronic noncancer pain? A systematic review and meta-analysis. Journal of Pain, 19(3), 233–256. doi:https://doi.org/j.pain.2017.09.010 [PubMed: 29122652]

Thames AD, Irwin MR, Breen EC, & Cole SW (2019). Experienced discrimination and racial differences in leukocyte gene expression. Psychoneuroendocrinology, 106, 277–283. doi:10.1016/j.psyneuen.2019.04.016 [PubMed: 31029930]

Tricco AC, Lillie E, Zarin W, O'Brient KK, Colquhoun H, Levac D, Moher D, Peters MD, Horsley T, & Weeks L (2018). PRIMSA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. Annals of Internal Medicine, 169, 467–473. doi: 10.7326/M18-0850 [PubMed: 30178033]

Wallace B, Varcoe C, Holmes C, Moosa-Mitha M, Moor G, Huspith M, & Craig KD (2021). Towards health equity for people experiencing chronic pain and social marginalization. International Journal for Equity in Health, 20, 53. doi:10.1186/s12939-021-01394-6 [PubMed: 33531018]

Ward S, Guest C Goodall I, & Bantel C, (2018). Practice and bias in intraoperative pain management: Results of a cross-sectional patient study and a survey of anesthesiologists. Journal of Pain Research, 11, 561–570. doi:10.2147/JPR.S153857 [PubMed: 29588614]

Zestcott CA, Blair IV, & Stone J (2016). Examining the presence, consequesnces, and reduction of implicit bias in health care: A narrative review. Group Process and Intergroup Relations, 19(4), 528–542. doi:10.1177/1368430216642029

Study selection process

Identification

Records identified from:
  Databases (n =684)
  Pubmed/Medline (n=286),
  PsycInfo (n=211),
  CINAHL (n=55),
  Scopus (n=132)

→

Records removed *before screening*:
  Duplicate records removed (n =202)
  Records marked as ineligible by advanced filter (n = 55)

Screening

Records screened based on title and abstract (n =427)

→

Records excluded due to lack of focus on musculoskeletal pain (n = 220)

Records sought for full-text retrieval (n =207)

→

Records could not be found (n =18)

Records assessed for eligibility (n=189)

→

Records excluded:
  Review article (n = 42)
  Did not examine bias or bias-targeted intervention (n =129)

Included

Studies included in review (n = 18)

Figure 1.
Preferred Reporting Items for Systematic Reviews and Meta-analyses Flow Diagram of Review Screening Process

Table 1.

Glossary of Terms

Bias: a person's inclination for or against a person or group of people that can influence unfair treatment

Discrimination: unjust treatment of different categories of people

Explicit bias: awareness of attitudes and prejudices toward certain people or groups of people

Implicit bias: attitudes toward people or held stereotypes about them that affect one's actions and decisions in an unconscious manner

Intersectionality: analytical framework for understanding how the various facets of one's social identity combine to create different modes of discrimination and privilege

Prejudice: assumption or opinion about a person based on the person's assumed membership in a certain group

Stigma: disapproval or discrimination against a person who is deemed to possess undesirable characteristics that deviate from social norms

Stereotype: a fixed representation or assumption(s) about an individual or group based on a certain characteristic or category attribute.