Chronic Noncancer Pain Management and Systemic Racism: Time to Move Toward Equal Care Standards

Malini Ghoshal1
Hannah Shapiro2
Knox Todd3
Michael E Schatman4,5

1Inspirra Healthcare, Plano, Texas, USA; 2Division of Alcohol, Drugs, and Addiction, McLean Hospital, Belmont, Massachusetts, USA; 3Department of Emergency Medicine, The University of Texas MD Anderson Cancer Center Houston, Texas, USA; 4Department of Diagnostic Sciences, Tufts University School of Dental Medicine, Boston, Massachusetts, USA; 5Department of Public Health and Community Medicine, Tufts University School of Medicine, Boston, Massachusetts, USA

Introduction

Although it is widely recognized that the United States has a severe and broad systemic racism problem, recent events have dramatically elevated the issue. Widespread protests in the US and around the world have brought much-deserved attention to the plights of Blacks, Indigenous and People of Color (BIPOC) regarding injustices that they experience on a daily basis. For the sake not only of BIPOC, but communities and societies as a whole, racial injustice can no longer be ignored or minimized.1

Racism in medicine dates to antiquity. Byrd and Clayton noted that the ancient Greeks viewed all slaves as inherently inferior and less intelligent, and that Aristotle displayed particular prejudice toward Black and Asian people.2 This laid the foundation for White superiority and non-White inferiority espoused by Galen, the 2nd-century Roman physician.3 Views of non-White individuals as “subhuman” persisted in Europe, and were brought to the Americas by Caucasian Western Europeans.2 White superiority and racism were used as a justification for enslaving Africans and Indigenous peoples for the financial gain of White colonizers. Non-White inferiority served as the bedrock of slavery, an ideology that was necessarily maintained by the White elite to continue their exploitation of Black persons. Enslaved Africans were provided with medical care only when financially advantageous to their owners.4 It was assumed by White American physicians that Black patients inherently experienced poor health, and this assumption persisted into at least the late 20th century, perpetuated in part by racial stereotypes, stigma and bias in medical school curricula.2 Even after the Civil War, racism in medicine persisted, with the profession writing off Black individuals as a “syphilis-soaked” and unfit race.5 Well into the 1900s, Black individuals were overutilized in medical demonstrations and risky experimentation,6 with the Tuskegee experiments leaving 500 poverty-stricken Black men with untreated syphilis.7 This long history of unequal treatment has rightfully led to a distrust of the medical community by Black patients.8

The 1965 Civil Rights Act and the creation of Medicare and Medicaid resulted in improved access to health care for Black patients, and limited efforts to improve access to medical education for underrepresented groups were made.9 Regardless, systemic racism in American medicine has persisted, resulting in problems with...
access, inferior treatment and poorer outcomes for BIPOC patients in every area of health care.\textsuperscript{10} Since arriving in the United States, Black individuals have had the worst health outcomes of any racial group—not in small part due to stigma, systematic oppression, and lack of access to care.\textsuperscript{2}

Today, implicit bias continues to negatively influence multiple avenues of the care continuum including access and quality of care. Bias also affects patient and provider communication, treatment-related decisions and ultimately contributes to poorer health outcomes and health disparity.\textsuperscript{11} In addition, studies show systemic racism, including discrimination, inflicts continued trauma, which increases hypervigilance and stress particularly in Black, Latinx, and Indigenous patients. Collectively these factors lead to a greater negative cumulative impact on both physical and mental health. Such impacts are manifest as changes in cardiovascular, metabolic, inflammatory, and psychological responses.\textsuperscript{12,13}

In 2008, the American Medical Association (AMA) issued a formal apology for racism in medicine.\textsuperscript{14} While this was a symbolic gesture, acknowledgement of wrongful past actions particularly toward Black individuals was a step in a positive direction toward building trust and improving health equity. In 2020, the AMA updated their AMA Manual of Style when classifying race and ethnicity in medical literature. This manual now recommends providing more information on race and ethnicity in research studies and calls for capitalizing Black and White race identifiers to align with the capitalization of other racial and ethnic categories. These changes signal an acknowledgment that race and ethnicity continue to play a role in disparities in medicine.\textsuperscript{15}

**Racism in Pain Medicine: A Review of the Literature**

As is the case in medicine, broadly, racial and ethnic disparities plague BIPOC patients suffering from pain. Disparities in pain assessment and treatment stem from both the personal nature of pain experiences and provider-related racial bias regarding pain in BIPOC patients, which can lead to undertreatment of pain.\textsuperscript{16} Further, failure by clinicians to account for the significance of cultural context in patient behavior cues and pain coping skills hampers assessment and treatment decisions.\textsuperscript{17} Much of the early research demonstrating these disparities pertained to their ability to predict opioid analgesia in emergency medicine. For example, Todd and colleagues determined that Latinx patients with isolated long-bone fractures presenting to the Emergency Department (ED) were only half as likely as non-Latinx White patients to receive opioid analgesia.\textsuperscript{18} This finding was particularly poignant given the results of a follow-up study published the following year from the same ED, which found no difference in physician ability to assess pain between Latinx and non-Latinx White patients.\textsuperscript{19} Further, data indicate that Latinx and non-Latinx White patients have the same expectations for analgesia in EDs.\textsuperscript{20} Another study determined that Black patients with long-bone fractures in the ED were significantly less likely to receive opioids than White patients, and significantly more likely to receive no analgesics whatsoever.\textsuperscript{21} Perhaps even more distressing are results from a study demonstrating that Black patients were significantly more likely to be denied insurance authorization for ED visits than were White patients.\textsuperscript{22}

On a more general basis, myriad studies have demonstrated that BIPOC patients have historically been less likely to receive opioid analgesia than are White patients across ages and painful conditions.\textsuperscript{23–33} Unfortunately, recent studies continue to demonstrate that BIPOC patients presenting with painful conditions continue to face disadvantages regarding assessment and treatment in EDs,\textsuperscript{34–38} with patient perceptions of this disparity serving as a barrier to even seeking emergency care.\textsuperscript{39} Similarly, a 2018 study of traumatically injured individuals requiring emergency medical services (EMS) transport to hospitals found that significantly fewer Black patients received opioids prehospital compared to other ethnic groups.\textsuperscript{40} Similar findings were obtained from a more recent study.\textsuperscript{34} Studies have found that implicit bias among providers affects their clinical judgement, decisions and behavior. Racial and ethnic stereotypes also influence assessments and treatment, especially with high pain intensity self-report among BIPOC patients.\textsuperscript{41–43} Use of the Implicit Association Test (IAT) in health systems has indicated that implicit bias among clinicians leads to discrimination and unequal care.\textsuperscript{44} Higher implicit bias among physicians is associated with specific behaviors such as failure to make eye contact with patients, using a condescending tone and pitch, discordant word choices, and more top-down directive communication with BIPOC patients. This negatively influences trust, causes anxiety, and leads to poorer outcomes.\textsuperscript{45,46}

Although the literature on disparities that BIPOC patients with acute painful conditions face in EDs is discouraging, numerous studies support the presence of
disparate treatment in all areas of pain medicine, from assessment to treatment. Regarding diagnosis, for example, a VA study determined that Black patients in primary care were significantly less likely to be screened for pain than were White patients. Further, several studies have indicated that BIPOC patients were less likely to receive advanced diagnostic imaging compared to White patients. Given these findings, it is not surprising that BIPOC patients’ pain is less likely than that of White patients to be treated through rehabilitative approaches such as physical therapy or addressed surgically.

Regarding racial and ethnic disparities in adult acute postoperative pain, McDonald found that White patients received higher dosages of opioids following appendectomies than did BIPOC patients. Ng and colleagues found in two 1996 studies that Black and Latinx patients received significantly less opioid analgesia than White patients following open reduction and internal fixation of a limb fracture. McNeill and colleagues determined that non-White hospital inpatients who had undergone surgeries were less satisfied with their analgesia than were White patients. Jimenez and colleagues found that Latinx children undergoing tonsillectomy and adenoidectomy received 30% less opioids than did White children. A more recent study of pediatric postoperative pain using case vignettes determined that as pediatricians’ pro-White bias increased, they became less likely to express willingness to prescribe to Black patients with an unvarying willingness to prescribe to White patients. Similarly, two studies determined that BIPOC women were less likely to receive opioid analgesics postpartum compared to White women. Again, this is not surprising given the findings that White women were more like to receive neuraxial anesthetics for caesarian sections than were Black and Latinx women.

BIPOC outpatients with chronic noncancer pain in a wide variety of settings have been found less likely to receive opioid analgesia than White patients, with these findings unfortunately having persisted for several decades to the present. Yet, with so many investigations indicating the difficulty experienced by BIPOC patients regarding access to opioid analgesia, studies suggest that they are generally subjected to even more aggressive risk mitigation procedures by providers. For example, Black patients receiving opioid analgesia were found to be more likely to be subjected to urine drug testing and restricted early refills than White patients, with similar findings obtained in a 2013 Veterans’ Administration study. Not surprisingly, Black chronic pain patients were determined to be more likely to have their long-term opioid therapy discontinued following the detection of illicit drug use than were White patients. Additionally, in this day of involuntary opioid tapers among non-aberrant and stable chronic pain patients, multiple studies have demonstrated that Black patients are more likely to have their dosages reduced than are White patients. These findings are particularly discouraging in light of recent data indicating that prescription pain medication misuse is less common among Black patients than in any other racial and ethnic group studied, as well as those from a 2018 study that found that prescription opioid abuse was significantly lower among Black and Latinx patients admitted for opioid misuse treatment as compared to admitted White patients. Further, recent data determined that deaths from prescription opioids are more common among White individuals misusing than BIPOC misusers. Finally, a 2020 study determined that while BIPOC chronic pain patients were less likely than White patients to receive a prescription for opioids, they were more likely to receive a prescription for naloxone, signaling providers’ heightened mistrust of BIPOC patients’ personal medication management. This is consistent with the “racialization” of legitimate opioid use vs prescription and illicit opioid misuse that has been described in the literature. Collectively, these studies paint a clear picture of BIPOC patients being perceived as less “worthy” of opioid analgesia, at higher risk of aberrancy, and requiring more rigorous risk mitigation – irrespective of the data demonstrating that this represents an egregious false narrative.

Another empirically established cause of BIPOC patients receiving inadequate analgesia compared to White patients is a disparity in pharmacy access. Pharmacies in predominately underrepresented neighborhoods serving BIPOC patients were found in two early studies to be less likely to receive sufficient opioid analgesic supplies compared to those in predominately White neighborhoods. Further disparity can be identified through a 2017 study determining that generally, areas with more BIPOC residents per capita had significantly fewer pharmacies, thereby increasing the challenges that BIPOC patients endure in their efforts to obtain all prescribed medications – including those for pain. This is consistent with the results of earlier studies identifying access issues in heavily underrepresented neighborhoods,
which the authors identified as “pharmacy deserts” and “medication deserts”. Additionally, a 2014 study determined that race was a determinant of access to pharmacy services such as discount generic drug programs. Thus, BIPOC patients are forced to deal not only with challenges relating to obtaining prescriptions for adequate analgesia but with difficulties in actually being able to fill prescriptions should they obtain them.

Access to pain care based on financial deprivation and/or insurance coverage is another disparity with which BIPOC patients are faced. This is not surprising given that racial/ethnically underrepresented patients have more limited access to health care due to their insurance coverage (or lack thereof), generally. Studies have determined that BIPOC patients have less access to quality pain care than White patients due to their insurance or inability to afford copays and other out-of-pocket expenses, which tends to result in poorer outcomes. In addition to economic barriers, literacy and language barriers also present challenges in accessing pain treatment for BIPOC individuals and can lead to miscommunication further eroding trust and influencing treatment decisions.

Numerous studies have demonstrated a strong positive relationship between perceived racial and ethnic discrimination and pain intensity. This is of particular importance, given the literature indicating that the experience of discrimination predicts inferior physical and mental health outcomes. Not surprisingly, data also indicate a positive relationship between perceived injustice and pain severity as well as poorer pain outcomes among BIPOC compared to White patients. Perceptions of racial injustice have been well established as undermining BIPOC patients’ trust in the medical establishment in which they are treated, with this lack of trust potentially compromising pain management efforts and their outcomes. Data suggest that due to perceptions of discrimination, many BIPOC individuals go so far as to delay, avoid seeking, or prematurely discontinue health care. Again, BIPOC patients’ access to adequate medical treatment becomes compromised, potentially resulting in increased morbidity and even mortality.

Moving Toward Equal Care Standards

Society has identified myriad social injustices at the systemic level stemming from inherent bias, discrimination and long-held stereotypes that lead to unequal healthcare, yet the medical community and policymakers have failed to enact substantial measures to right past wrongs. While there are a multitude of discussions regarding unequal access and treatment of BIPOC patients in health research, within health systems and broadly in our communities, change has been slow and perfunctory. Up to this point, we have summarized myriad studies demonstrating the pervasiveness of racially motivated disparities in pain care in the US. However, simply raising awareness of implicit and explicit bias is insufficient; the time for definitive action toward substantial improvements in the racial determinants of pain care is now.

To deconstruct the current system and rebuild it, increasing trust and addressing gaps in access and treatment will require large-scale will and action. This can be done by taking steps to incorporate BIPOC voices in policy decisions, increasing the number of BIPOC professionals in leadership and health equity roles, and providing more opportunities for BIPOC individuals to enter health and medical professions, in particular Black, Indigenous and Latinx individuals focused on pain management practices. In parallel, utilizing an individualized approach to pain assessment and treatment will help clinicians recognize the significance of cultural context in pain coping, pain experiences, and how economic factors such as treatment affordability and access can drive treatment decisions for underrepresented groups.

Training issues are paramount, as effective cultural sensitivity training in the health sciences seems to be uncommon. Numerous calls have been made for the inclusion of anti-racism training within medical school curricula, as teaching students about issues such as implicit bias, health disparities, and cultural competence has apparently been insufficient. Additionally, aggressive proactive measures should be taken to increase the number of BIPOC health care professionals engaged in pain management. Recent census data estimate that approximately 76% of Americans identify as “non-Hispanic White”, with the remaining 24% identifying as BIPOC. That roughly 56% of the US physician population identifies as White with the other 44% identifying as BIPOC appears at first glance to be encouraging. However, closer scrutiny of these data indicates that only 5% identify as Black and 6% as Latinx, with the aforementioned census data indicating that Black individuals comprise 13.4% of the population and Latinx individuals comprising 18.5%. Thus, in medicine broadly, the two most prevalent BIPOC groups are severely underrepresented, and patients within these
groups are less likely to have a racially concordant provider than are White patients, which has the potential to result in less favorable pain outcomes.\textsuperscript{150} Data regarding the representation of Black and Latinx physicians in pain medicine are more elusive, but there is no evidence suggesting greater representation than in medicine, generally.

Given the data indicating that physician-patient race/ethnicity concordance increases patient trust and adherence,\textsuperscript{160-166} a national effort to produce more BIPOC physicians in primary care and all specialties is essential as our nation’s population continues to become more diverse. With concerns regarding adherence associated with opioid analgesics continuing to be prominent, such efforts become even more imperative in pain medicine. Accordingly, consideration should be given to incentivize both undergraduate medical students and residency/fellowship training programs to increase the ranks of BIPOC trainees. Such incentivization would not be without precedent. For example, a 2009 systematic review determined that incentivization programs have resulted in greater numbers of health care providers choosing to work in underserved areas.\textsuperscript{167} Types of incentives include direct financial incentives, service-requiring scholarships, educational loans with service requirements, loan repayment programs, and service-option educational loans. Incentivizing physicians where to practice, however, has proven easier than incentivizing them regarding what to practice. With the passage of the Affordable Care Act (ACA), the shortage of primary care providers became an even more salient issue, and calls for similar direct and indirect incentivization were made.\textsuperscript{168,169} Although Primary Care Residency Expansion (PCRE) grants from the Health Resources and Services Administration were temporarily available per the ACA, a 2015 study determined that these time-limited grants were unlikely to increase the flow of medical students into primary care residencies in a sustainable manner.\textsuperscript{170} Congress has attempted to incentivize the expansion of primary care graduate medical education, yet the offered incentives have offered only minimally financial benefit to those choosing primary care – resulting in the perpetuation of the shortage.\textsuperscript{171} Additionally, it is in hospitals’ best financial interests to train subspecialists for whom their reimbursements will be higher as opposed to primary care residents.\textsuperscript{172} Accordingly, recent calls for a more direct financial benefit are being made,\textsuperscript{173} with Ahmed and Carmody recently opining that providing financial compensation or expanding loan forgiveness programs for physicians entering practice in the most needed specialties or areas would create a powerful incentive to encourage doctors to work in the areas of greatest societal need. (p. 5) \textsuperscript{172}

Given the relative shortage of BIPOC pain physicians, we posit that such direct financial incentivization for BIPOC physicians to enter pain medicine training programs will be imperative as a step toward reducing systemic racism in pain medicine and improving the care that BIPOC patients receive. Similarly, BIPOC nurses, physician assistants, physical therapists, all others who treat chronic pain, and students in these fields should also be directly incentivized to level the playing field. However, more needs to be done in terms of education, beginning in the earliest phases of health care education. Courses covering systemic racism and strategies for overcoming racial/ethnic bias should be provided to both undergraduate and graduate health care students. Although health care curricula deal with the strains of a growing amount of information that needs to be taught in a limited amount of classroom time, the importance of teaching students about the damage unnecessarily caused by systemic racism ought not be understated. Further, continuing education requirements for physicians and allied health providers should include mandatory training in racial/ethnic sensitivity issues. State boards of health care professions have the right to require their licensees to take coursework covering specific topics and do so regularly. For example, 20 state boards currently require a prescribed number of continuing medical education (CME) each renewal cycle on pain management, with many others having requirements for CME specifically on opioid prescribing.\textsuperscript{174} Should there not also be a continuing education requirement for issues of racial/ethnic bias?

Another strategy for enhancing communication between providers and BIPOC patients is enhanced utilization of culturally competent interpreters when needed. Such practices have strong evidence-bases for improving pain outcomes. For example, a 2012 study of limited English proficiency (LEP) patients found that those provided with access to interpreters reported better quality pain treatment and appeared to result in patients’ reports of better communication regarding pain with their providers.\textsuperscript{175} Additionally, the importance of interpreters having a degree of medical competence as well as bilingual fluency if they are to be effective cannot be understated.\textsuperscript{176} Even if an interpreter must be used, pain care providers can engage in thoughtful dialogue regarding race and culture with patients and how they play a role in pain management. Doing so can foster trust and engender collaborative treatment decisions, which has been found to be particularly challenging for White
providers treating BIPOC patients. Physicians and other pain care professionals should also be aware of the availability of several useful tools that can aid organizations in bridging language and communication gaps. For example, the National Institute on Minority Health and Health Disparities (NIMHD) has developed a language access portal (LAP) which provides information in several languages specific to conditions identified with health disparities. Other useful tools for improving cross-cultural communication with BIPOC patients include the Culturally and Linguistically Appropriate Services (CLAS) standards and the National Institutes of Health’s HealthReach program for health information in multiple languages.

Summary and Conclusions
Based on our review, it is clear that the history of systemic racism in pain medicine has been an ugly and unfortunate one, resulting in needless suffering by so many patients simply because of their race/ethnicity. The current Coronavirus pandemic – together with the ongoing protests regarding the need for social justice – has highlighted the persistent detrimental effects of systemic racism, including the impact of long-standing stress and trauma. Yet, we should not lose sight of these unfortunate times representing an opportunity to create sustained and meaningful change toward delivering equitable pain care. Implicit bias remains a contributor to healthcare disparities, broadly. Given that patients suffering from chronic pain are already stigmatized and marginalized, BIPOC chronic pain patients are particularly vulnerable. Provider self-awareness of bias, understanding the cultural context of pain, showing empathy, using a softer tone, listening, and allowing patients to voice their concerns are all important strategies to reduce stress and improve pain management outcomes. On a broader level, evening the playing field will also require the incorporation of BIPOC patients into policy decisions, increasing the availability of BIPOC pain care professionals in the American health care system, and a paradigmatic revision in the models under which pain care professionals are trained. Each of these transformations will be imperative if pain care is to ever adhere to the bioethical principle of justice. Our expectation is not that this analysis will result in an immediate and dramatic revision of the system in which BIPOC patients with pain are treated. However, we are hopeful that by bringing these issues to the attention of policymakers and pain care professionals, the unique plights of BIPOC patients with pain will begin to be more widely recognized and addressed.

Disclosure
Dr Michael E Schatman reports research consultancy for Firstox and Modscript, outside the submitted work. The authors report no other potential conflicts of interest for this work.

References
1. Johnson SS. Equity, justice, and the role of the health promotion profession in dismantling systemic racism. Am J Health Promot. 2020;34(10):916–924. doi:10.1177/1040357819894557
2. Byrd WM, Clayton LA. Race, medicine, and health care in the United States: A historical survey. J Natl Med Assoc. 2001;93(3 Suppl):11S–34S.
3. Wasserman HP. Ethnic Pigmentation: Historical, Psychological, and Clinical Aspects. New York: Elsevier; 1974.
4. Byrd WM. Race, biology, and health care: reassessing a relationship. J Health Care Poor Underserved. 1999;1(3):27 8–296. doi:10.1353/hpu.2010.0102
5. Morais HM. The History of the Negro in Medicine. New York: Publishers Company, Inc; 1967.
6. Savitt TL. The use of blacks for medical experimentation and demonstration in the old south. J Southern Hist. 1982;48:331–348. doi:10.2307/2207450
7. Gamble VN. Under the shadow of Tuskegee: african Americans and health care. Am J Public Health. 1997;87:1773–1778.
8. Armstrong K, Ravenell KL, McMurphy S, Pult M. Racial/ethnic differences in physician distrust in the United States. Am J Public Health. 2007;97(7):1283–1289. doi:10.2105/APHJ.2005.080762
9. Shea S, Fullilove MT. Entry of black and other minority students into US medical schools: historical perspective and recent trends. N Engl J Med. 1985;313:933–940. doi:10.1056/NEJM19851003131506
10. Centers for Disease Control and Prevention. CDC health disparities and inequalities report—United States, 2013. MMWR Morb Mortal Wkly Rep. 2013;62(suppl 3):1–187.
11. Hall WJ, Chapman MV, Lee KM, et al. Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes: A systematic review. Am J Public Health. 2015;105(12):e60–e76. doi:10.2105/AJPH.2015.302903
12. Williams DR, Lawrence JA, Davis BA, Vu C. Understanding how discrimination can affect health. Health Serv Res. 2019;54 Suppl 2(Suppl 2):1374–1388. doi:10.1111/1475-6773.13222
13. Myers HF, Wyatt GE, Ullman JB, et al. Cumulative burden of lifetime adversities: trauma and mental health in low-SES African Americans and Latinos. Psychiatr Trauma. 2015;7(3):243–251. doi:10.1037/a0039077
14. Aluko Y. American Medical Association apologizes for racism in medicine. J Natl Med Assoc. 2008;100(10):1246–1247. doi:10.1016/S0027-9684(15)31496-6
15. American Medical Association. AMA style insider: updates to reporting black and white as racial categories; 2020. Available from: https://amastyleinsider.com/2020/07/01-updates-to-reporting-black-and-white-as-racial-categories/. Accessed September 5, 2020.
16. Hoffman KM, Trawalter S, Axt JR, Oliver MN. Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. Proc Natl Acad Sci U S A. 2016;113(16):4296–4301. doi:10.1073/pnas.1516047113
17. Mossey JM. Defining racial and ethnic disparities in pain management. Clin Orthop Relat Res. 2011;469(7):1859–1870. doi:10.1007/s11999-011-1770-9

18. Todd KH, Samarao N, Hoffman JR. Ethnicity as a risk factor for inadequate emergency department analgesia. JAMA. 1993;269(12):1537–1539. doi:10.1001/jama.1993.03500120075029

19. Todd KH, Lee T, Hoffman JR. The effect of ethnicity on physician estimates of pain severity in patients with isolated extremity trauma. JAMA. 1994;271(12):925–928.

20. Lee WW, Burelbach AE, Fosnocht D. Hispanic and non-Hispanic white patient pain management expectations. Am J Emerg Med. 2001;19:549–550. doi:10.1053/ajem.2001.28038

21. Todd KH, Deaton C, D’Adamo AP, Goe L. Ethnicity and analgesic practice. Ann Emerg Med. 2000;35(1):11–16. doi:10.1016/S0196-0644(01)00999-0

22. Lowe RA, Chhaya S, Nasci K, et al. Effect of ethnicity on denial of authorization for emergency department care by managed care gatekeepers. Acad Emerg Med. 2001;8:259–266. doi:10.1111/j.1553-2712.2001.tb01302.x

23. Fletcher MJ, Kertesz SG, Kohn MA, Gonzales R. Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments. JAMA. 2008;299(1):70–78. doi:10.1001/jama.2007.64

24. Mills AM, Shofner FS, Boulis AK, Holena DN, Abenhul SB. Racial disparity in analgesic treatment for ED patients with abdominal or back pain. Am J Emerg Med. 2011;29(7):752–756.

25. Tsai CL, Sullivan AF, Gordon JA, et al. Racial/ethnic differences in emergency care for joint dislocation in US EDs. Am J Emerg Med. 2012;30(9):1970–1980. doi:10.1016/j.ajem.2012.04.023

26. Johnson TJ, Weaver MD, Borresso S, et al. Association of race and ethnicity with management of abdominal pain in the emergency department. Pediatrics. 2013;132(4):e851–e858. doi:10.1542/peds.2012-3127

27. Joynt M, Train MK, Robbins BW, Halterman JS, Caiola E, Fortuna RJ. The impact of neighborhood socioeconomic status and race on the prescribing of opioids in emergency departments throughout the United States. J Gen Intern Med. 2013;28(12):1604–1610. doi:10.1007/s11606-013-2516-z

28. Rasooly IR, Mullins PM, Mazer-Amirshahi M, van den Anker J, Pines JM. The impact of race on analgesia use among pediatric emergency department patients. J Pediatr. 2014;163(3):618–621. doi:10.1016/j.jpeds.2014.04.059

29. Goyal MK, Kuppersmann N, Cleary SD, Teach SJ, Chamberlain JM. Racial disparities in pain management of children with appendicitis in emergency departments. JAMA Pediatr. 2016;170(11):996–1002. doi:10.1001/jamapediatrics.2015.1915

30. Shah AA, Zogg CK, Zafar SN, et al. Analgesic access for acute abdominal pain in the emergency department among racial/ethnic minority patients: A nationwide examination. Med Care. 2015;53(12):1000–1009. doi:10.1097/MLR.0000000000000444

31. Zook HG, Kharbanda AB, Flood A, Harmon B, Puamala SE, Payne NR. Racial differences in pediatric emergency department triage scores. J Emerg Med. 2016;50(5):720–727. doi:10.1016/j.jemermed.2015.02.056

32. Lee HH, Lewis CW, McKinney CM. Disparities in emergency department pain treatment for toothache. JDR Clin Trans Res. 2016;1(3):226–233.

33. Singhal A, Tien Y, Hsia RY. Racial-ethnic disparities in opioid prescriptions at emergency department visits for conditions commonly associated with prescription drug abuse. PLoS One. 2016;11(8):e0159224. doi:10.1371/journal.pone.0159224

34. Kennel J, Withers E, Parsons N, Woo H. Racial/ethnic disparities in pain treatment: evidence from Oregon emergency medical services agencies. Med Care. 2019;57(12):924–929. doi:10.1097/MLR.0000000000012028

35. Romanelli RJ, Shen Z, Szwerinski N, Scott A, Lockhart S, Pressman AR. Racial and ethnic disparities in opioid prescribing for long bone fractures at discharge from the emergency department: A cross-sectional analysis of 22 centers from a health care delivery system in northern California. Ann Emerg Med. 2019;74(5):622–631. doi:10.1016/j.annemergmed.2019.05.018

36. Benzec AR, Bell C, Derazin M, Mack R, MacIntosh T. Disparities in opioid pain management for long bone fractures. J Racial Ethn Health Disparities. 2020;7(4):740–745. doi:10.1007/s40465-020-00701-1

37. Berger AJ, Wang, Rowe C, Chung B, Chang S, Haleblian G. Racial disparities in analgesic use amongst patients presenting to the emergency department for kidney stones in the United States. Am J Emerg Med. 2020;37:6757(20):30017–6. doi:10.1016/j.ajem.2020.01.017

38. Goyal MK, Johnson TJ, Chamberlain JM, et al. Racial and ethnic differences in emergency department pain management of children with fractures. Pediatrics. 2020;145(5):e20193370. doi:10.1542/peds.2019-3370

39. Kanter J, Gibson R, Lawrence RH, et al. Perceptions of US adolescents and adults with sickle cell disease on their quality of care. JAMA Netw Open. 2020;3(5):e200616. doi:10.1001/jamanetworkopen.2020.6016

40. Hewes HA, Dai M, Mann NC, Baca T, Tailliac P. Prehospital pain management: disparity by age and race. Prehosp Emerg Care. 2018;22(2):189–197. doi:10.1080/10903127.2017.1367444

41. Schwartz MB, Chambless HO, Brownell KD, Blair SN, Billington C. Weight bias among health professionals specializing in obesity. Obes Res. 2003;11(9):1033–1039. doi:10.1038/oby.2003.142

42. Mathur VA, Richeson JA, Paice JA, Muzyka M, Chiao JY. Racial bias in pain perception and response: experimental examination of automatic and deliberate processes. J Pain. 2014;15(5):476–484. doi:10.1016/j.jpain.2014.01.488

43. Tait RC, Chibnall JT. Racial/ethnic disparities in the assessment and treatment of pain: psychosocial perspectives. Am Psychol. 2014;69(2):131–141. doi:10.1037/a0035204

44. Green AR, Carney DR, Pullin DJ, et al. Implicit bias among physicians and its prediction of thrombolyis decisions for black and white patients. J Gen Intern Med. 2007;22(9):1231–1238. doi:10.1007/s11606-007-0258-5

45. Hirsh AT, Hollingshead NA, Ashburn-Nardo L, Kroenke K. The interaction of patient race, provider bias, and clinical ambiguity on pain management decisions. J Pain. 2015;16(6):558–568. doi:10.1016/j.jpain.2015.03.003

46. Hagiwara N, Slater RB, Eggly S, Penner LA. Physician racial bias and word use during racially discordant medical interactions. Health Commun. 2017;32(4):401–408. doi:10.1080/10410236.2017.1138389

47. Ng B, Dimsdale JE, Rollink JD, Shapiro H. The effect of ethnicity on prescriptions for patient-controlled analgesia for post-operative pain. Pain. 1996;66(1):9–12. doi:10.1016/0304-3959(96)02955-7

48. Burgess DJ, Drayval AA, Nelson DB, et al. A national study of racial differences in pain screening rates in the VA health care system. Clin J Pain. 2013;29(2):118–123. doi:10.1097/AJP.0b013e31826a86ae

49. Carey TS, Garrett JM. The relation of race to outcomes and the use of health care services for acute low back pain. Spine. 2003;28(4):390–394. doi:10.1097/01.BRS.0000048499.25275.51

50. Taylor BA, Casas-Ganem J, Vaccaro AR, Hilibrand AS, Hanscom BS, Albert TJ. Differences in the work-up and treatment of conditions associated with low back pain by patient gender and ethnic background. Spine. 2005;30(3):359–364. doi:10.1097/01.brs.0000152115.79236.6e
51. Horner KB, Jones A, Wang L, Winger DG, Marin JR. Variation in advanced imaging for pediatric patients with abdominal pain discharged from the ED. Am J Emerg Med. 2016;34(12):2320–2325. doi:10.1016/j.ajem.2016.08.041

52. Glover M, Daye D, Khalilzadeh O, et al. Socioeconomic and demographic predictors of missed opportunities to provide advanced imaging services. J Am Coll Radiol. 2017;14(11):1403–1411. doi:10.1016/j.jacr.2017.05.015

53. Kohns DJ, Haig AJ, Uren B, et al. Clinical predictors of the medical interventions provided to patients with low back pain in the emergency department. J Back Musculoskelet Rehabil. 2018;31(1):197–204. doi:10.3233/BMR-170806

54. Hoenig H, Rubenstein L, Kahn K. Rehabilitation after hip fracture—equal opportunity for all? Arch Phys Med Rehabil. 1996;77(1):58–63. doi:10.1002/sms.90003-9993/0690221-X

55. Harada ND, Chun A, Chiu V, Pakalniskis A. Patterns of rehabilitation utilization after hip fracture in acute hospitals and skilled nursing facilities. Med Care. 2000;38(11):1119–1130. doi:10.1097/00005650-200011000-00006

56. de Heer WD, Hansen M. Physical therapy and hospitalization among Medicare beneficiaries with low back pain: A retrospective cohort study. Spine. 2016;41(19):1515–1522. doi:10.1097/BRS.0000000000001571

57. Sandstrom R, Brunns A. Disparities in access to outpatient rehabilitation therapy for African Americans with arthritis. J Racial Ethn Health Disparities. 2017;4(4):599–606. doi:10.1007/s40661-016-0263-7

58. Iversen MD, Schwartz TA, von Heideken J, et al. Socio-demographic and clinical correlates of physical therapy utilization in adults with symptomatic knee osteoarthritis. Phys Ther. 2018;98(8):670–678. doi:10.1093/ptj/pzy052

59. Khoja SS, Almeida GJ, Freburger JK. Recommendation rates for physical therapy, lifestyle counseling, and pain medications for managing knee osteoarthritis in ambulatory care settings: A cross-sectional analysis of the national ambulatory care survey (2007-2015). Arthritis Care Res. 2020;72(2):184–192. doi:10.1002/acr.24064

60. Gittelsohn AM, Halpern J, Sanchez RL. Income, race, and surgery in Maryland. Am J Public Health. 1991;81:1435–1441. doi:10.2105/AJPH.81.11.1435

61. Mort EA, Weissman JS, Epstein AM. Physician discretion and racial variation in the use of surgical procedures. Arch Intern Med. 1994;154:761–767. doi:10.1001/archinte.1994.042000707009

62. Chibnall JT, Tait RC, Andresen EM, Hadler NM. Race differences in diagnosis and surgery for occupational low back injuries. Spine. 2006;31:1272–1275. doi:10.1097/01.brs.0000217584.79528.9b

63. Carey TS, Freburger JK, Holmes GM, et al. Race, care seeking, and utilization for chronic back and neck pain: population perspectives. J Pain. 2010;11(4):343–350. doi:10.1016/j.jpain.2009.08.003

64. Hausmann LR, Mor M, Hanusa BH, et al. The effect of patient race on total joint replacement recommendations and utilization in the orthopedic setting. J Gen Intern Med. 2010;25(9):982–988. doi:10.1007/s11606-010-1399-5

65. Collins JE, Katz JN, Donnell-Fink LA, Martin SD, Losina E. Cumulative incidence of ACL reconstruction after ACL injury in adults: role of age, sex, and race. Am J Sports Med. 2013;41(3):544–549. doi:10.1177/0363546512472042

66. Oliver MN, Wells KM, Joy-Gaba JA, Hawkins CB, Nosek BA. Do physicians’ implicit views of African Americans affect clinical decision making? J Am Board Fam Med. 2014;27(2):177–188. doi:10.3122/jabfm.2014.02.120314

67. Kingston K, Curry EJ, Galvin JW, Li X. Shoulder adhesive capsulitis: epidemiology and predictors of surgery. J Shoulder Elbow Surg. 2018;27(8):1437–1443. doi:10.1016/j.jse.2018.04.004

68. Chapman CG, Floyd SB, Thigpen CA, Tokish JM, Chen B, Brooks JM. Treatment for rotator cuff tear is influenced by demographics and characteristics of the area where patients live. JB JS Open Access. 2018;3(3):e0005. doi:10.2106/JBJS.OA.18.00005

69. Chiu RG, Murphy BE, Zhu A, Mehta AI. Racial and ethnic disparities in the inpatient management of primary spinal cord tumors. World Neurosurg. 2020;140:175–184.

70. McDonald DD. Gender and ethnic stereotyping and narcotic analgesic administration. Res Nurs Health. 1994;17(1):45–49. doi:10.1002/nur.4770170017

71. Ng B, Dimsdale JE, Shragg GP, Deutsch R. Ethnic differences in analgesic consumption for postoperative pain. Psychosom Med. 1996;58(2):125–129. doi:10.1097/00006482-199603000-00005

72. McNeill JA, Sherwood GD, Starck PL. The hidden error of mismanaged pain: a systems approach. J Pain Symptom Manage. 2004;28(1):47–58. doi:10.1016/j.jpainsymman.2003.11.005

73. Jimenez N, Seidel K, Martin LD, Rivara FP, Lynn AM. Perioperative analgesic treatment in Latino and non-Latino pediatric patients. J Health Care Poor Underserved. 2010;21(1):29–236. doi:10.1353/hpu.0.0236

74. Sabin JA, Greenwald AG. The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma. Am J Public Health. 2012;102(5):988–995. doi:10.2105/AJPH.2011.306261

75. Badreddin N, Grobman WA, Yee LM. Racial disparities in postpartum pain management. Obstet Gynecol. 2019;134(6):1147–1153. doi:10.1097/AOG.000000000003561

76. Johnson JF, Asioudi IV, McKenzie CP, et al. Racial and ethnic inequities in postpartum pain evaluation and management. Obstet Gynecol. 2019;134(6):1155–1162. doi:10.1097/AOG.000000000003505

77. Glance LG, Wissler R, Glantz C, Osler TM, Mukamel DB. Racial differences in the use of epidural analgesia for labor. Anesthesiology. 2007;106:19–25. doi:10.1097/00000552-200701000-00008

78. Butwick AJ, Blumenfeld YJ, Brookfield KF, Nelson LM, Weiniger CF. Racial and ethnic disparities in mode of anesthesia for cesarean delivery. Anesth Analg. 2016;122:472–479. doi:10.1213/ANE.000000000000679

79. Kposowa AJ, Tsunokai GT. Searching for relief: racial differences in treatment of patients with back pain. Race Soc. 2002;5:193–203. doi:10.1016/j.rsoc.2004.01.004

80. Dominick KL, Dudley TK, Grambow SC, Oddone EZ, Bosworth HB. Racial differences in health care utilization among patients with osteoarthritis. J Rheumatol. 2003;30(10):2201–2206.

81. Chen I, Kurz J, Pasanen M, et al. Racial differences in opioid use for chronic nonmalignant pain. J Gen Intern Med. 2005;20(7):593–598. doi:10.1007/s11606-005-1015-5

82. Kobus AM, Smith DH, Morasco BJ, et al. Correlates of higher-dose opioid medication use for low back pain in primary care. J Pain. 2012;13(11):1131–1138. doi:10.1016/j.jpain.2012.09.003

83. Burgess DJ, Nelson DB, Gravely AA, et al. Racial differences in prescription of opioid analgesics for chronic noncancer pain in a national sample of veterans. J Pain. 2014;15(4):447–455. doi:10.1016/j.jpain.2013.12.010

84. Mafi JN, McCarthy EP, Davis RB, Landon BE. Worsening trends in the management and treatment of back pain. JAMA Intern Med. 2013;173(17):1573–1581. doi:10.1001/jamainternmed.2013.8992

85. Kao MJ, Minh LC, Huang GY, et al. Trends in ambulatory physician opioid prescription in the United States, 1997–2009. PM R. 2014;6:575–582. doi:10.1016/j.pmrj.2013.12.015
86. Ringwalt C, Roberts AW, Gugelmann H, Skinner AC. Racial disparities across provider specialties in opioid prescriptions dispensed to Medicaid beneficiaries with chronic noncancer pain. Pain Med. 2015;16(4):633–640. doi:10.1111/pme.12555

87. Hunnicutt JN, Ulbricht CM, Tija J, Lapane KL. Pain and pharmacologic pain management in long-stay nursing home residents. Pain. 2017;158(6):1091–1099. doi:10.1016/j.pain.2017.05.001

88. Groenewald CB, Rabbits JA, Hansen EE, Palermo TM. Racial differences in opioid prescribing for children in the United States. Pain. 2018;159(10):2050–2057. doi:10.1016/j.pain.2018.05.001

89. Lin HC, Wang Z, Boyd C, Simoni-Wastila L, Buu A. Associations between statewide prescription drug monitoring program (PDMP) requirement and physician patterns of prescribing opioid analgesics for patients with non-cancer chronic pain. Addict Behav. 2018;76:348–354. doi:10.1016/j.addbeh.2017.08.032

90. Friedman J, Kim D, Schneberk T, et al. Assessment of racial/ethnic and income disparities in the prescription of opioids and other controlled medications in California. JAMA Intern Med. 2019;179(4):469–476. doi:10.1001/jamainternmed.2018.6721

91. Ly DP. Racial and ethnic disparities in the evaluation and management of pain in the outpatient setting, 2006–2015. Pain Med. 2019;20(2):223–232. doi:10.1093/pm/pny074

92. King C, Liu X. Racial and ethnic disparities in opioid use among US adults with back pain. Spine. 2020;45(15):1062–1066. doi:10.1097/BRS.0000000000003446

93. Becker WC, Starrels JL, Heo M, Li X, Weiner MG, Turner BJ. Racial disparities in primary care opioid risk reduction strategies. Ann Fam Med. 2011;9(2):121–125. doi:10.1370/afm.1422

94. Hausmann LR, Gao S, Lee ES, Kwok CK. Racial disparities in the monitoring of patients on chronic opioid therapy. Pain. 2013;154(1):46–52. doi:10.1016/j.pain.2012.07.034

95. Gaither JR, Gordon K, Crystal S, et al. Racial disparities in discontinuation of long-term opioid therapy following illicit drug use among black and white patients. Drug Alcohol Depend. 2018;192:371–376. doi:10.1016/j.drugalcdep.2018.05.033

96. Buonora M, Perez HR, Heo M, Cunningham CO, Starrels JL. Race and gender are associated with opioid dose reduction among patients on chronic opioid therapy. Pain Med. 2019;20(8):1519–1527. doi:10.1093/pm/pny137

97. Fenton JJ, Agnoli AL, Xing G, et al. Trends and rapidity of dose tapering among patients prescribed long-term opioid therapy, 2008–2017. JAMA Neurol Open. 2019;2(11):e1916271. doi:10.1001/jamanetworkneurology.2019.16271

98. Campbell CI, Bahorik AL, VanVeldhuisen P, Weisner C, Rubinstein AL, Ray GT. Use of a prescription opioid registry to examine opioid misuse and overdose in an integrated health system. Prev Med. 2018;101:31–37.f. doi:10.1016/j.ypmed.2018.01.019

99. Johnson-Jennings M, Duran B, Hakes J, Paffrath A, Little MM. The influence of undertreated chronic pain in a national survey: prescription medication misuse among American Indians, Asian Pacific Islanders, Blacks, Hispanics and whites. SSM Popul Health. 2020;11:100563. doi:10.1016/j.ssmph.2020.100563

100. Pouget ER, Fong C, Rosenblum A. Racial/ethnic differences in prevalence trends for heroin use and non-medical use of prescription opioids among entrants to opioid treatment programs, 2005–2016. Subst Use Misuse. 2018;53(2):290–300. doi:10.1080/10826084.2017.1334070

101. Jayawardhana J, Abraham AJ, Perri M. Deaths among opioid users: impact of potential inappropriate prescribing practices. Am J Manag Care. 2019;25(4):e98–e103.

102. Madden EF, Qadan F. Racial inequities in U.S. naloxone prescriptions. Subst Abus. 2020;41(2):232–244. doi:10.1080/08897077.2019.1686721

103. Netherland J, Hansen H. White opioids: pharmaceutical race and the war on drugs that wasn’t. Biosocieties. 2017;12(2):217–238. doi:10.1057/biosoc.2015.46

104. Alexander MJ, Kiang MV, Barbieri M. Trends in Black and White opioid mortality in the United States, 1979–2015 [published correction appears in Epidemiology. 2019 Mar;30(2):e13]. Epidemiology. 2018;29(5):707–715. doi:10.1097/EDP.0000000000000858

105. Green CR, Ndao-Brumblay SK, West B, Washington T. Differences in prescription opioid analgesic availability: comparing minority and white pharmacies across Michigan. J Pain. 2005;6(10):689–699. doi:10.1016/j.jpain.2005.06.002

106. Morrison RS, Wallenstein S, Natale DK, Senzel RS, Huang LL. “We don’t carry that”—failure of pharmacies in predominantly nonwhite neighborhoods to stock opioid analgesics. N Engl J Med. 2000;342:1023–1026. doi:10.1056/NEJM200004063421406

107. Chisholm-Burns MA, Spivey CA, Gatwood J, Wiss A, Hohmeier K, Erickson SR. Evaluation of racial and socioeconomic disparities in medication pricing and pharmacy access and services. Am J Health Syst Pharm. 2017;74(10):653–668. doi:10.2146/ajhp150872

108. Amstislasvili P, Matthews A, Sheffield S, et al. Medication deserts: survey of neighborhood disparities in availability of prescription medications. Int J Health Geogr. 2012;11:48. doi:10.1186/1476-072X-11-48

109. Qato DM, Davigail LS, Wilder J, et al. ‘Pharmacy deserts’ are prevalent in Chicago’s predominantly minority communities, raising medication access concerns. Health Aff. 2014;33:1958–1965. doi:10.1377/hlthaff.2013.1397

110. Erickson SR, Workman P. Services provided by community pharmacies in Wayne County, Michigan: a comparison by ZIP code characteristics. J Am Pharm Assoc (2003). 2014;54(6):618–624. doi:10.1331/JAPhA.2014.14105

111. James C, Thomas M, Lillic-Blanton M, et al. Key facts: race, ethnicity and medical care. Washington, DC: The Henry J. Kaiser Family Foundation; 2007. Available from: http://www.kff.org/minorityhealth/upload/6069-02.pdf. Accessed August 23, 2020.

112. Hegenerau CL. Are we covered? Health insurance disparities in the Affordable Care Act era. Michigan Sociological Rev. 2016;30:93–108.

113. Sohn H. Racial and ethnic disparities in health insurance coverage: dynamics of gaining and losing coverage over the life-course. Popul Res Policy Rev. 2017;36(2):181–201. doi:10.1007/s11113-016-9416-y

114. Wehby GL, Luy W. The impact of the ACA medicaid expansions on health insurance coverage through 2015 and coverage disparities by age, race/ethnicity, and gender. Health Services Research. 2018;53(2):1248–1271. doi:10.1111/1475-6773.12711

115. Sanders CP, Cope MR, Park PN, Jeffery W, Jackson JE. Infants without health insurance: racial/ethnic and rural/urban disparities in infant households’ insurance coverage. PLoS One. 2020;15(1):e0222387. doi:10.1371/journal.pone.0222387

116. Hostetler MA, Auinger P, Szilagyi PG. Parenteral analgesic and sedative use among ED patients in the United States: combined results from the National Hospital Ambulatory Medical Care Survey (NHAMCS) 1992–1997. Am J Emerg Med. 2002;20:139–143. doi:10.1053/ajem.2002.33002

117. Green CR, Baker TA. Patient attitudes regarding healthcare utilization and referral: A descriptive comparison in African- and Caucasian Americans with chronic pain. J Natl Med Assoc. 2004;96:31–42.

118. Kennedy J, Morgan S. A cross-national study of prescription nonadherence due to cost: data from the joint Canada-United States survey of health. Clin Ther. 2006;28:1217–1224. doi:10.1016/j.clinthera.2006.07.009
119. Reyes-Gibby CC, Aday LA, Todd KH, Cleeland CS, Anderson KO. Pain in aging community-dwelling adults in the United States: non-Hispanic whites, non-Hispanic blacks, and Hispanics. J Pain. 2007;8(1):75–84. doi:10.1016/j.jpain.2006.06.002

120. Turner BJ, Rodriguez N, Valero MA, Liang Y, Winkler P, Jackson L. Less exercise and more drugs: how a low-income population manages chronic pain. Arch Phys Med Rehabil. 2017;98(11):2111–2117. doi:10.1016/j.apmr.2017.02.016

121. Charlestone L, Royce J, Monteth TS, et al. Migraine care challenges and strategies in US uninsured and underinsured adults: A narrative review, Part 1. Headache. 2018;58(4):506–511. doi:10.1111/head.13286

122. Fiscella K, Sanders MR. Racial and ethnic disparities in the quality of health care. Annu Rev Public Health. 2016;37:375–394. doi:10.1146/annurev-publhealth-032315-021439

123. Centers for Disease Control and Prevention. Culture & health literacy: tools for cross-cultural communication and language access can help organizations address health literacy and improve communication effectiveness; 2020. Available from: https://www.cdc.gov/healthliteracy/culture.html. 3, 2020.

124. Gee GC, Spencer MS, Chen J, Takeuchi D. A nationwide study of discrimination and chronic health conditions among Asian Americans. Am J Public Health. 2007;97(7):1275–1282. doi:10.2105/AJPH.2006.091827

125. Edwards RR. The association of perceived discrimination with low back pain. J Behav Med. 2008;31(5):379–389. doi:10.1007/s10865-008-9160-9

126. Chae DH, Walters KL. Racial discrimination and racial identity attitudes in relation to self-rated health and physical pain and impairment among two-spirit American Indians/Alaska Natives. Am J Public Health. 2009;99 Suppl 1(Supp1):S144–S151. doi:10.2105/AJPH.2007.126003

127. Burgess D, Grill J, Noorbaloochi S, et al. The effect of perceived racial discrimination on bodily pain among older African American men. Pain Med. 2009;10:1341–1352. doi:10.1111/j.1526-437X.2009.00742.x

128. Ezenwa MO, Fleming MF. Racial disparities in pain management in primary care. J Health Dispar Res Pract. 2012;5(3):12–26.

129. Goodin BR, Pham QT, Glover TL, et al. Perceived racial discrimination, but not mistrust of medical researchers, predicts the heat pain tolerance of African Americans with symptomatic knee osteoarthritis. Health Psychol. 2013;32(11):1117–1126. doi:10.1037/a0031912

130. Haywood C Jr, Diener-West M, Strouse J, et al. Perceived discrimination in health care is associated with a greater burden of pain in sickle cell disease. J Pain Symptom Manage. 2014;48(5):934–943. doi:10.1016/j.jpainsymman.2014.02.002

131. Carlisle SK. Perceived discrimination and chronic health in adults from nine ethnic subgroups in the USA. Ethn Health. 2015;20(3):309–326. doi:10.1080/13557868.2014.921891

132. Dugan SA, Lewis TT, Eversson-Rose SA, Jacobs EA, Harlow SD, Janssen I. Chronic discrimination and bodily pain in a multiracial cohort of midlife women in the study of women’s health across the nation. Pain. 2017;158(9):1656–1665. doi:10.1097/j.pain.0000000000000957

133. Brown TT, Partanen J, Chuong L, Villaverde V, Chantal Griffin A, Mendelson A. Discrimination hurts: the effect of discrimination on the development of chronic pain. Soc Sci Med. 2018;204:1–8. doi:10.1016/j.socscimed.2018.03.015

134. Walker Taylor JL, Campbell CM, Thorpe RJ Jr, Whitfield KE, Nkimbeng M, Sztanon SL. Pain, racial discrimination, and depressive symptoms among African American women. Pain Manag Nurs. 2018;19(1):79–87. doi:10.1016/j.pmn.2017.11.008

135. Bakshiaie J, Rogers AH, Mayorga NA, et al. Perceived racial discrimination and pain intensity/disability among economically disadvantaged Latinos in a federally qualified health center: the role of anxiety sensitivity. J Immigr Minor Health. 2019;21(1):21–29. doi:10.1007/s10903-018-0715-8

136. Swift SL, Gilmour MM, Elfassy T, et al. Racial discrimination in medical care settings and opioid pain reliever misuse in a U.S. cohort: 1992 to 2015. PLoS One. 2019;14(12):e0226490. doi:10.1371/journal.pone.0226490

137. Paradies Y. A systematic review of empirical research on self-reported racism and health. Int J Epidemiol. 2006;35:888–901. doi:10.1093/ije/dyi056

138. Pascoe EA, Smart Richman L. Perceived discrimination and health: A meta-analytic review. Psychol Bull. 2009;135:531–554. doi:10.1037/a0016059

139. Brondolo E, Hausmann LR, Jhalani J, et al. Dimensions of perceived racism and self-reported health: examination of racial/ethnic differences and potential mediators. Ann Behav Med. 2011;42:14–28.

140. Sullivan MJ, Adams H, Horan S, Maher D, Boland D, Gross R. The role of perceived injustice in the experience of chronic pain and disability: scale development and validation. J Occup Rehabil. 2008;18:249–261.

141. Sullivan MJ, Scott W, Trost Z. Perceived injustice: A risk factor for problematic pain outcomes. Clin J Pain. 2012;28:484–488. doi:10.1097/AJP.0b013e3182527d13

142. McParland JL, Eccleston C. “It’s not fair”: social justice appraisals in the context of chronic pain. Curr Dir Psychol Sci. 2013;22:484–489. doi:10.1177/0963721413496811

143. Trost Z, Sturgeon J, Guck A, et al. Examining injustice appraisals in a racially diverse sample of individuals with chronic low back pain. J Pain. 2019;20(1):83–96. doi:10.1016/j.jpain.2018.08.005

144. Ziadni MS, Sturgeon JA, Bissell D, et al. Injustice appraisal, but not pain catastrophizing, mediates the relationship between perceived ethnic discrimination and depression and disability in low back pain. J Pain. 2019;19:526-5900(19)30815–6. doi:10.1016/j.jpain.2019.09.007.

145. LaVeist TA, Nickerson KJ, Bowie JV. Attitudes about racism, medical mistrust, and satisfaction with care among African American and white cardiac patients. Med Care Res Rev. 2000;57(Suppl 1):146–161. doi:10.1177/1077558700057001S07

146. Corbie-Smith G, Thomas SB, St George DM. Distrust, race, and research. Arch Intern Med. 2002;162(21):2458–2463. doi:10.1001/archinte.162.21.2458

147. Boulware LE, Cooper LA, Ramer LE, LaVeist TA, Powe NR. Race and trust in the health care system. Public Health Rep. 2003;118(4):358–365. doi:10.1016/S0033-3549(04)50262-5

148. Greer TM. Perceived racial discrimination in clinical encounters among African American hypertensive patients. J Health Care Poor Underserved. 2010;21(1):251–263. doi:10.1353/hpu.0.0265

149. Sewell AA. Disaggregating ethnoracial disparities in physician trust. Soc Sci Res. 2015;54:1–20. doi:10.1016/j.ssresearch.2015.06.020

150. Lee C, Ayers SL, Kronenfeld JJ. The association between perceived provider discrimination, healthcare utilization and health status in racial and ethnic minorities. Ethn Dis. 2009;19(3):330–337.

151. Haywood C Jr, Lanzkron S, Ratanavongsa N, Bediako SM, Lattimer-Nelson L, Beach MC. Hospital self-discharge among adults with sickle-cell disease (SCD): associations with trust and interpersonal experiences with care. J Hosp Med. 2010;5(5):289–294. doi:10.1002/jhm.643

152. Campbell RD, Long LA. Culture as a social determinant of mental and behavioral health: A look at culturally shaped beliefs and their impact on help-seeking behaviors and service use patterns of Black Americans with depression. Best Pract Ment Health. 2014;10(2):48–62.
153. Williams MT, Taylor RJ, Mouzon DM, Oshin LA, Himle JA, Chatters LM. Discrimination and symptoms of obsessive-compulsive disorder among African Americans. Am J Orthopsychiatry. 2017;87(6):636–645. doi:10.1037/ort0000285
154. Acosta D, Ackerman-Barger K. Breaking the silence: time to talk about race and racism. Acad Med. 2017;92(3):285–288. doi:10.1097/ACM.0000000000001416
155. Ahmad NJ, Shi M. The need for anti-racism training in medical school curricula. Acad Med. 2017;92(8):1073. doi:10.1097/ACM.0000000000001806
156. Tsai J, Crawford-Roberts A. A call for critical race theory in medical education. Acad Med. 2017;92(8):1072–1073. doi:10.1097/ACM.0000000000001810
157. United States Census Bureau. Quick facts: July 1, 2019. Available from: https://www.census.gov/quickfacts/fact/table/US/ PST045219. Accessed September 7, 2020.
158. Association of American Medical Colleges. Diversity in Medicine: percentage distribution of population in the United States in 2016 and 2060, by race and Hispanic origin; 2019. Available from: https://www.aamc.org/data-reports/workforce/ interactive-data/figure-18-percentage-all-active-physicians-race /ethnicity-2018. Accessed September 7, 2020.
159. Anderson SR, Gianola M, Perry JM, Losin EAR. Clinician-patient racial/ethnic concordance influences racial/ethnic minority pain: evidence from simulated clinical interactions [published online ahead of print, 2020 Aug 24]. Pain Med. 2020;ppnaa258. doi:10.1093/pm/pnab258.
160. Street RJ Jr, O’Malley KJ, Cooper LA, Haidet P. Understanding concordance in patient-physician relationships: personal and ethnic dimensions of shared identity. Ann Fam Med. 2008;6 (3):198–205. doi:10.1370/afm.821
161. Traylor AH, Schmittiedel JA, Uartus CS, Mangione CM, Subramanian U. Adherence to cardiovascular disease medications: does patient-provider race/ethnicity and language concordance matter? J Gen Intern Med. 2010;25(11):1172–1177. doi:10.1007/s11606-010-1424-8
162. Dett A, Mangione CM, Nunez de Jaimes F, et al. Language concordance, interpersonal care, and diabetes self-care in rural Latino patients. J Gen Intern Med. 2014;29(12):1650–1656. doi:10.1007/s11606-014-3006-7
163. Parker MM, Fernández A, Moffet HH, Grant RW, Torreblanca A, Karter AJ. Association of patient-physician language concordance and glycemic control for limited-English proficiency Latinos with Type 2 diabetes [published correction appears in JAMA Intern Med. 2017 Mar 1;177(3):449]. JAMA Intern Med. 2017;177 (3):380–387. doi:10.1001/jamainternmed.2016.8648
164. Shen MJ, Peterson EB, Costas-Muhiz R, et al. The effects of race and racial concordance on patient-physician communication: A systematic review of the literature. J Racial Ethn Health Disparities. 2018;5(1):117–140. doi:10.1007/s40615-017-0350-4
165. Nazione S, Perrault EK, Keating DM. Finding common ground: can provider-patient race concordance and self-disclosure bolster patient trust, perceptions, and intentions? J Racial Ethn Health Disparities. 2019;6(5):962–972. doi:10.1007/s40615-019-00597-6
166. Ma A, Sanchez A, Ma M. The impact of patient-provider race/ethnicity concordance on provider visits: evidence from the medical expenditure panel survey. J Racial Ethn Health Disparities. 2019;6(5):1011–1020. doi:10.1007/s40615-019-00602-y
167. Bärnighausen T, Bloom DE. Financial incentives for return of service in underserved areas: a systematic review. BMC Health Serv Res. 2009;9:86. doi:10.1186/1472-6963-9-86
168. Peccoralo LA, Callahan K, Stark R, DeCherrie LV. Primary care training and the evolving healthcare system. Mt Sinai J Med. 2012;79(4):451–463. doi:10.1002/msj.21329
169. Heisler MJ. Physician Supply and the Affordable Care Act. Washington, DC: Congressional Research Service; 2013.
170. Chen RM, Pettersen S, Bazemore A, Grumbach K. Are time-limited grants likely to stimulate sustained growth in primary care residency training? A study of the primary care residency expansion program. Acad Med. 2015;90(9):1278–1283. doi:10.1097/ACM.0000000000000805
171. Klink K. Incentives for physicians to pursue primary care in the ACA era. AMA J Ethics. 2015;17(7):637–646.
172. Ahmed H, Carmody JB. On the looming physician shortage and strategic expansion of graduate medical education. Currus. 2020;12(7):e9216.
173. Phillips JP, Peterson LE, Fang B, Kovar-Gough I, Phillips RL Jr. Debt and the emerging physician workforce: the relationship between educational debt and family medicine residents’ practice and fellowship intentions. Acad Med. 2019;94(2):267–273. doi:10.1097/ACM.0000000000002468
174. NEJM Knowledge+: State requirements for pain management CME. Available from: https://knowledgeplus.nejm.org/state- requirements-for-pain-management-cme/. Accessed September 9, 2020.
175. Jimenez N, Moreno G, Leng M, Buchwald D, Morales LS. Patient-reported quality of pain treatment and use of interpreters in Spanish-speaking patients hospitalized for obstetric and gynecological care. J Gen Intern Med. 2012;27(12):1602–1608. doi:10.1007/s11606-012-2154-x
176. Moreno MR, Otero-Sabogal R, Newman J. Assessing dual-role staff- interpreter linguistic competency in an integrated healthcare system. J Gen Intern Med. 2007;22 Suppl 2(Suppl2):331–335. doi:10.1007/s11606-007-0344-8
177. Ferguson WJ, Candib LM. Culture, language, and the doctor-patient relationship. Fam Med. 2002;34(5):353–361.
178. Frantsve LM, Kems RD. Patient-provider interactions in the management of chronic pain: current findings within the context of shared medical decision making. Pain Med. 2007;8(1):25–35. doi:10.1111/j.1526-4637.2007.00250.x
179. US Department of Health and Human Services National Institute on Minority Health and Health Disparities. Reaching people in multiple languages. Available from: https://www.nimhd.nih.gov/programs/edu-training/language-access/index.html?utm_medium= email&utm_source=govdelivery. Accessed September 10, 2020.
180. US Department of Health and Human Services Office of Minority Health. National standards for culturally and linguistically appropriate services (CLAS) in health and health care. Available from: https://t hinkcultur alhealth.hhs.gov/ass ents/pdfs/EnhancedNationalCLASStandards.pdf. Accessed September 10, 2020.
181. National Institutes for Health US National Library of Medicine. HealthReach: health Information in many languages. Available from: https://healthreach.nlm.nih.gov/. Accessed September 10, 2020.
Publish your work in this journal

The Journal of Pain Research is an international, peer reviewed, open access, online journal that welcomes laboratory and clinical findings in the fields of pain research and the prevention and management of pain. Original research, reviews, symposium reports, hypothesis formation and commentaries are all considered for publication. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit http://www.dovepress.com/testimonials.php to read real quotes from published authors.

Submit your manuscript here: https://www.dovepress.com/journal-of-pain-research-journal