

The Value of Diversity, Equity, and Inclusion Race and Ethnicity Affecting Patients



Christopher O. Bayne, MD

KEYWORDS

• Diversity • Race • Ethnicity • Hand Surgery • Patients • Outcomes

KEY POINTS

- The United States is becoming increasingly diverse.
- Although diversity in Medicine and Hand Surgery is increasing, it is not matching the diversity of the population as a whole.
- Patient race and ethnicity are important factors in health-care inequity in the United States.
- Physician diversity is associated with improved patient care.
- Increasing and maintaining physician diversity in Hand surgery is paramount.

BACKGROUND

Since 2010, the racial and ethnic diversity of the United States has increased significantly, with the results of the 2020 US Census revealing that diversity is increasing in 19 of every 20 US counties.^{1,2} This trend is projected to continue, with the overall White population decreasing for the first time in history and most people aged younger than 18 years identifying as other than White (including multiracial, Hispanic, Asian, or Black).¹ As of 2020, non-Latino White people make up 57.8% of the United States population compared with 63% in 2010.^{3,4}

Traditionally, the diversity of the United States populace has not been mirrored by the demographics of the physicians who care for it. For example, in 2018, although those identifying as Black numbered about 13% of the population, only 5% of physicians identified as Black.⁵ Although those identifying as Hispanic or Latino numbered about 18% population, only 5.8% of physicians identified as Hispanic or Latino.⁵ Only 0.3% of physicians identified as American Indian or Alaskan native and 0.1% as Hawaiian native or Pacific Islander.⁵

Data on the demographics of practicing Hand surgeons are less available but a recent American

Association for Surgery of the Hand abstract presenting the results of a study calculating the racial and ethnic diversity among faculty Hand Surgeons and fellows at academic centers reported that 75.6% were White.⁶ This suggests that Hand Surgeons practicing in the United States are significantly less diverse than the country as a whole.

To understand the value of diversity in Hand surgery, it is important to recognize how the race and ethnicity of both patients and physicians affect the delivery of care.

PATIENT RACE AND ETHNICITY

According to the American Psychological Association, the term race refers to physical differences that groups and cultures consider socially significant, whereas the term ethnicity refers to shared cultural characteristics including language, ancestry, practices, and beliefs.⁷

Patient race and ethnicity are important factors in health-care inequity in the United States, with significant demographic disparities in coverage, chronic health conditions, and mortality.⁸ For example, African American men have the lowest life expectancy of any group in the United States,⁹ living less than non-Hispanic White men by an average of 4.5 years.^{10,11}

Department of Orthopaedic Surgery, University of California, Davis, 4860 Y Street, Suite 3800, Sacramento, CA 95817, USA

E-mail address: cbayne@ucdavis.edu

Hand Clin 39 (2023) 9–15

<https://doi.org/10.1016/j.hcl.2022.08.001>

0749-0712/23/© 2022 Elsevier Inc. All rights reserved.

Differences in poverty level and access to resources exist across racial and ethnic groups¹² but differences in morbidity, mortality, quality of life, and disability exist despite controlling for socioeconomic status.^{13–17} The reasons for these disparities are complex and multifactorial, including long-standing systematic inequalities in housing, economics, and health-care systems.^{8,11,18,19} In Hand surgery, we frequently witness these complex factors affect patient care (Figs. 1 and 2). It can be helpful to consider the effects of race and ethnicity on patient care in Hand surgery and in general by examining differences in access, quality of care, and outcomes.²⁰

ACCESS TO CARE

Disparities in access to care have been well documented in the Orthopedic Surgery and Plastic Surgery literature. Skolasky and colleagues reported a lower rate of hospitalization for lumbar spinal stenosis surgery for Black and Hispanic patients compared with White patients,²¹ and Zhang and coinvestigators found significantly lower total knee arthroplasty rates among non-White patients as well as a lower likelihood of non-White patients to have arthroplasty surgery at a high volume hospital.²² Butler and colleagues found that women of color who lived in regions of high plastic surgeon density and had private insurance had postmastectomy breast reconstruction rates that were 25% lower than Caucasian women living in similar circumstances.²³

Although there are fewer published studies, existing evidence demonstrate that the same disparities exist in hand and upper extremity surgery. Eichinger reported a 54% lower utilization rate for shoulder arthroplasty among Black patients and a 74% lower utilization rate among Hispanic patients compared with White patients.²⁴ Brodeur and

colleagues found that Non-White and Hispanic patients with carpal tunnel syndrome had lower odds of carpal tunnel release than White, non-Hispanic patients.²⁵ The authors reported similar findings in the management of trigger finger in their abstract presented at a recent American Association for Hand Surgery annual meeting, with non-White patients having lower odds of surgical release than White patients.²⁶

In order to improve access to care, it is first important that Hand Surgeons understand that disparities in access exist. Second, it is important that they recognize that they are not uncommon. Although some differences in access may be attributable to geographic differences, the literature demonstrates that there are disparities across racial and ethnic groups for patients treated within the same medical center, at major medical centers, and across socio-economic lines.^{22–26} As such, it may be beneficial for the Hand surgeon to reflect on how differences in access to care can affect patients within his or her own practice. Although systemic inequities are likely to contribute significantly,^{8,11,18,19} it is only when we evaluate our own practices that we will be able to address barriers to care at the individual level.

QUALITY OF CARE

Commonly cited measures of quality include, but are not limited to, experience of care, preventive care, chronic disease control, and hospitalizations.²⁷ It is well documented that quality of care is influenced by race and ethnicity.^{27–34}

The National Consumer Assessment of Health Plans (CAHPS) data demonstrate that Asian Americans, especially those with limited English proficiency, report lower experience of care rates compared with White patients.^{27–29} An analysis of Medicare data revealed that Black beneficiaries

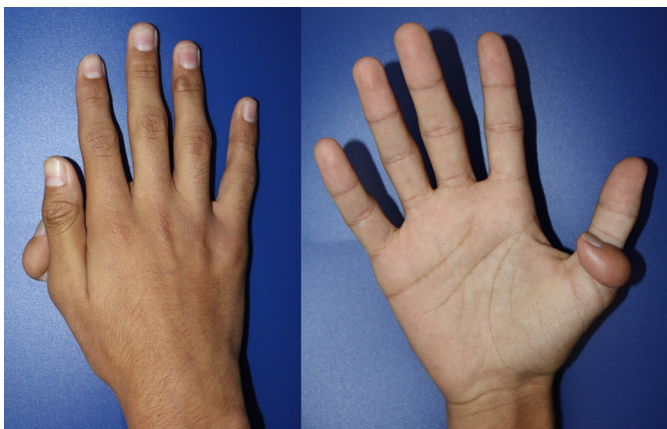


Fig. 1. A 16-year-old Latino boy who presented with a right thumb preaxial polydactyly. This resulted in significant pain over the years and was removed via WALANT approach in clinic with immediate relief of pain and discomfort. The child kept this extra digit without initially seeking surgical care because of cultural issues and the fear of general anesthesia. (Courtesy of Michael Galvez, MD, Madera, CA)

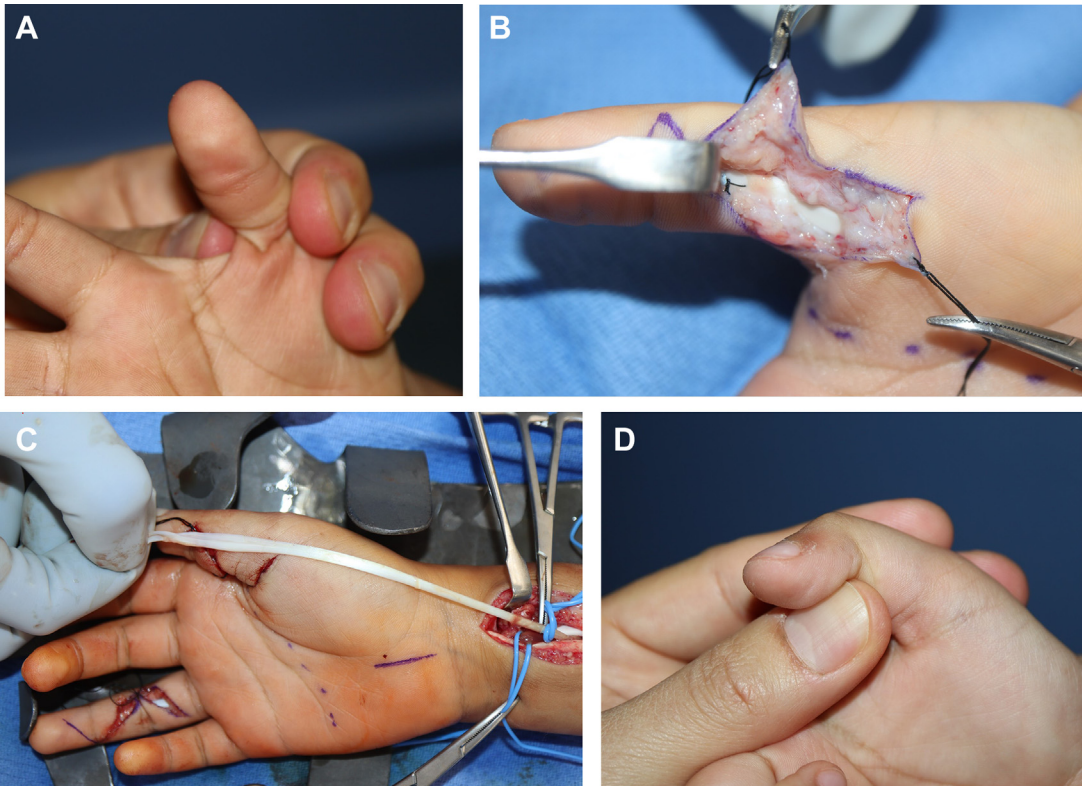


Fig. 2. A 5-year-old Latina girl who presented 2 years after sharp laceration of her right thumb and presented with inability to flex her dominant right thumb at the interphalangeal joint (A). She underwent staged flexor tendon reconstruction with hunter rod placement (B). Given a fibrosed flexor pollicis longus tendon she underwent second stage reconstruction with ring finger flexor digitorum profundus tendon transfer (C). Her postoperative recovery was complicated by missed appointments but ultimately, she did develop full and complete function of her right thumb interphalangeal joint with active flexion (D). This child had delayed care secondary to socioeconomic challenges, complex social situation, and difficulty with traveling resulting in delayed care. (Courtesy of Michael Galvez, MD, Madera, CA)

received only 4 nonelective procedures more frequently than White beneficiaries (lower limb amputation, debridement, arteriovenostomy, and bilateral testicle removal)—all of which were suggestive of higher rates of delayed diagnosis or failure in management of chronic disease.^{30,31}

Similar findings are present in the Hand Surgery literature. In their analysis of CAHPS data, Menendez and colleagues found that compared with primarily English-speaking patients, primarily Spanish-speaking patients were less likely to be satisfied with the care provided in a Hand Surgery office.³² This included lower satisfaction with provider listening and with provider spending enough time during visits.³² Attempt at replantation surgery is less likely for Black and Hispanic children than for White children, despite controlling for confounding factors.³³ Mahmoudi and colleagues demonstrated similar findings in adult patients, with African American patients being less likely to undergo replantation procedures than White

patients despite controlling for patient and hospital characteristics.³⁴

In their analysis on racial and ethnic disparities in health-care quality, Fiscella and Sanders document that health-care disparities are a result of the combination of social disadvantage and insufficient health-care system responsiveness to this disadvantage.²⁷ Although eliminating these disparities will require commitment at a national level, local quality improvement strategies that engage patients, communities, and clinicians can have a positive impact.²⁷ This can include efforts to ensure excellent communication with patients. For example, Hand Surgery practices can work to guarantee the availability of translating services for their patients who do not speak English. In addition, patients who speak a language that is different from that of their provider may require more time during visits to confirm appropriate understanding and patient satisfaction. It is important that health-care interventions are explained

well for all patient populations, and Hand Surgeons should ensure that the discussion of procedure details, expectations, outcomes, and complications consider potential patient cultural differences in the acceptability of these factors.

OUTCOMES

Many studies across specialties suggest disparities in health-care outcomes based on race and ethnicity.^{22,35–42} Willer and colleagues have shown that Black and Hispanic children are more likely than White children to die after surgery regardless of income status.^{35,36} Azin and colleagues found increased morbidity, mortality, and readmissions for Black patients across surgical specialties and procedures.³⁷

Although there are few Hand Surgery publications that directly examine the effect of patient race and ethnicity on outcomes, the data that exist suggest similar disparities.³⁸ Jawad and colleagues found worse outcome for non-White patients with bone sarcoma of the hand and wrist compared with White patients.³⁸ Contrastingly, the orthopedic surgery, plastic surgery, and general surgery literature is notable for numerous studies that demonstrate outcome disparities.^{22,39–42} Because Hand Surgery is a subspecialty of orthopedic, plastic, and general surgery, it is logical that additional Hand Surgery studies would have comparable findings.

Although there is potential for inherent systemic issues such as health-care provider and health-care system biases to influence a patient's disposition and outcome,³⁷ the Hand surgeon who is aware of this potential for outcome disparities may be inspired to examine the diversity within his or her own patient population. This may allow Hand Surgeons to address possible causes of outcome differences within their own practices. For example, as Azin and colleagues underscore, Black patients may be less likely to have access to meaningful community supports that facilitate remaining at home after discharge.³⁷ Minority patients may benefit from more longitudinal and multidisciplinary disposition planning including social work, discharge coordinators, and nurse navigators.⁴³

PHYSICIAN DIVERSITY

Although patient race and ethnicity have been shown to be correlated with poor access, quality, and outcomes, the benefits of physician racial and ethnic diversity have been well documented in the medical literature.^{44–50} Physician diversity has been shown to promote better access to

care and improve health-care quality and satisfaction for underserved populations.^{44,45} For example, Black and Hispanic physicians are significantly more likely to practice in underserved minority communities than physicians from other groups.⁴⁶ Concordance, most often defined as a similarity or shared identity between physician and patient based on a demographic attribute, has been shown to have a positive influence on disparities in medical care, improving usage, communication, and patient satisfaction.⁴⁷ Minority patients with physicians of similar ethnicity are more likely to rate their physicians as excellent, to receive preventative care, and to be satisfied with their health care overall.⁴⁸ Spanish-speaking patients report greater satisfaction with their care when they communicate directly with a Spanish-speaking physician than through professional interpreter services with a non-Spanish-speaking physician.⁴⁹ Some studies also suggest improvement in health-care outcomes for minority patients with patient-physician race concordance but this data are mixed and inconclusive.⁵¹

Compared with primary care, fewer studies evaluate the effect of patient-physician racial and ethnic concordance in the subspecialty setting. In one of the few published studies, Kamal and colleagues found that patients value concordance in subspecialty care as much as they do in primary care.⁵⁰ Although it did not specifically evaluate patient-physician concordance in hand and upper extremity surgery, the study was conducted at a multispecialty Orthopedic Surgery clinic that included Hand Surgery care.⁵⁰

It is clear that if we are to improve patient care for all populations, we must make physician diversity a priority.

SUMMARY

As Hand Surgeons, it is our goal to provide the best care for our patients. If we are to do so, it is imperative that we work to ensure and maintain diversity within our specialty. Fortunately, strides are being made in this regard. The class of students entering medical school in 2021 was more diverse than any historically preceding class.⁵² In addition, in a study analyzing graduate medical education demographic data between 1995 and 2012, Bae and colleagues found that diversity has increased significantly in Hand Surgery trainees.³ However, more action is necessary. Wo and colleagues' study revealing the current lack of diversity among Hand Surgeons and Hand Surgery fellows⁶ demonstrates that much work remains if we are to make our field as diverse as the patients that we care for. This may be facilitated through measures

such as making diversity a goal across our institutions.^{3,53} (As an example the American Society for Surgery of the Hand has a Diversity and Inclusion statement, a Diversity Task Force, and gives a platform for educational topics on Diversity, Equity, and Inclusion at the Annual Conference.) Additional measures, such as increasing exposure of students at the undergraduate and medical school level to Hand Surgery, bringing attention to the work and careers of minority Hand Surgeons and trainees, and highlighting opportunities in Hand Surgery to care for underserved populations may attract more minority applicants.⁵⁴ It is also important that we ensure that those people of color that do decide to pursue a career in Hand Surgery know that they belong, are wanted in our specialty, and are able to train and practice in a supportive environment.⁵⁴

These efforts are necessary if we are to provide the excellent care that our patients deserve to *all* of our patient populations.

DISCLOSURE

Dr C.O. Bayne or an immediate family member serves as a paid consultant to LimaCorporate. Dr C.O. Bayne has not received anything of value from or has stock or stock options held in a commercial company or institution related directly or indirectly to the subject of this article.

REFERENCES

- Bureau USC. 2020 U . S . Population More Racially and Ethnically Diverse Than Measured in 2010. 2021. Available at: <https://www.census.gov/library/stories/2021/08/2020-united-states-population-more-racially-ethnically-diverse-than-2010.html>.
- Tavernise S, Gebeloff R. Census Shows sharply Growing Numbers of Hispanic, Asian and multiracial Americans. New York Times; 2021. Available at: <https://www.nytimes.com/2021/08/12/us/us-census-population-growth-diversity.html>.
- Bae GH, Lee AW, Park DJ, et al. Ethnic and gender diversity in hand surgery trainees. *J Hand Surg Am* 2015;40(4):790–7.
- United States Census Bureau. Racial and Ethnic Diversity in the United States: 2010 Census and 2020 Census. 2021;(X):2020-2021. Available at: <https://www.census.gov/library/visualizations/interactive/racial-and-ethnic-diversity-in-the-united-states-2010-and-2020-census.html>.
- AAMC. Diversity in Medicine: Facts and Figures 2019. *Assoc Am Med Coll* 2019;20001. Available at: <https://www.aamc.org/data-reports/workforce/interactive-data/figure-18-percentage-all-active-physicians-race/ethnicity-2018>.
- Wo LM, Smith KL, Plana NM, et al. *Current Diversity in Academic Hand Surgery*. Koloa, HI: Am Assoc hand Surg Annu Meet; 2021.
- American Psychological Association. Racial and Ethnic Identity. 2022. Available at: <https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/racial-ethnic-minorities>.
- Carratala S, Maxwell C. Health Disparities by Race and Ethnicity. *Cent Am Prog* 2020;1–8. October 2018.
- Arias E, Heron M, Xu J. *United States Life Tables, 2013*. *Natl Vital Stat Rep* 2017;66(3):1–64.
- Murphy SL, Xu J, Kochanek KD, et al. Deaths: Final data for 2015. *Natl Vital Stat Rep* 2017;66(6). <https://doi.org/10.1136/vr.h753>.
- Alsan M, Garrick O, Graziani G. Does diversity matter for health? Experimental evidence from Oakland. *Am Econ Rev* 2019;109(12):4071–111.
- Creamer J. Poverty Rates for Blacks and Hispanics Reached Historic Lows in 2019. US Census Bur 2020. Available at: <https://www.census.gov/library/stories/2020/09/poverty-rates-for-blacks-and-hispanics-reached-historic-lows-in-2019.html>.
- Ferraro KF, Farmer MM. Double Jeopardy to Health Hypothesis for African Americans: Analysis and Critique. *J Health Soc Behav* 1996;37(1):27–43.
- Winkleby MA, Kraemer HC, Ahn DK, et al. Ethnic and socioeconomic differences in cardiovascular disease risk factors: Findings for women from the third national health and nutrition examination survey, 1988–1994. *J Am Med Assoc* 1998;280(4):356–62.
- Clark DO, Maddox GL. Racial and Social Correlates of Age-Related Changes in Functioning. *J Gerontology* 1992;47(5):S222–32.
- Hughes M, Thomas ME. The continuing significance of race revisited: A study of race, class, and quality of life in America, 1972 to 1996. *Am Sociol Rev* 1998; 63(6):785–95.
- Farmer MM, Ferraro KF. Are racial disparities in health conditional on socioeconomic status? *Soc Sci Med* 2005;60(1):191–204.
- Smedley BD, Stith AY, Nelson AR. Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care (with CD). *Unequal Treat Confronting Racial Ethn Disparities Heal Care (With Cd)* 2003;(Cdc):1–764.
- Malizos KN, Dailiana ZH, Innocenti M, et al. Vascularized bone grafts for upper limb reconstruction: Defects at the distal radius, wrist, and hand. *J Hand Surg Am* 2010;35(10):1710–8.
- Pandya NK, Wustrack R, Metz L, et al. Current concepts in orthopaedic care disparities. *J Am Acad Orthop Surg* 2018;26(23):823–32.
- Skolasky RL, Maggard AM, Thorpe RJ, et al. United States hospital admissions for lumbar spinal stenosis: Racial and ethnic differences, 2000 through 2009. *Spine (Phila Pa 1976)* 2013;38(26):2272–8.

22. Zhang W, Lyman S, Boutin-Foster C, et al. Racial and ethnic disparities in utilization rate, hospital volume, and perioperative outcomes after total knee arthroplasty. *J Bone Jt Surg - Am* 2016;98(15):1243–52.
23. Butler PD, Familusi O, Serletti JM, et al. Influence of race, insurance status, and geographic access to plastic surgeons on immediate breast reconstruction rates. *Am J Surg* 2018;215(6):987–94.
24. Eichinger JK, Greenhouse AR, Rao MV, et al. Racial and sex disparities in utilization rates for shoulder arthroplasty in the United States disparities in shoulder arthroplasty. *J Orthop* 2019;16(3):195–200.
25. Brodeur PG, Patel DD, Licht AH, et al. Demographic Disparities amongst Patients Receiving Carpal Tunnel Release: A Retrospective Review of 92,921 Patients. *Plast Reconstr Surg - Glob Open* 2021; 9(11):E3959.
26. Brodeur PG, Patel DD, Raducha JE, et al. Social disparities in the management of trigger finger: an analysis of 31,411 Cases. Carlsbad, (CA): Am Assoc Hand Surg Annu Meeting; 2022.
27. Fiscella K, Sanders MR. Racial and Ethnic Disparities in the Quality of Health Care. *Annu Rev Public Health* 2016;37:375–94.
28. Goldstein E, Elliott MN, Lehrman WG, et al. Racial/ethnic differences in patients' perceptions of inpatient care using the HCAHPS survey. *Med Care Res Rev* 2010;67(1):74–92.
29. Morales LS, Elliott MN, Weech-Maldonado R, et al. Differences in CAHPS adult survey reports and ratings by race and ethnicity: an analysis of the National CAHPS benchmarking data 1.0. *Health Serv Res* 2001;36(3):595–617. <http://www.ncbi.nlm.nih.gov/pubmed/11482591><http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC1089244>.
30. McBean AM, Gornick M. Differences by race in the rates of procedures performed in hospitals for Medicare beneficiaries. *Health Care Financ Rev* 1994; 15(4):77–90.
31. National Research Council. In: Bulatao RA, Anderson NB, editors. *Understanding racial and ethnic differences in health in late life: a Research Agenda*. Washington, DC: The National Academies Press; 2004.
32. Menendez ME, Loeffler M, Ring D. Patient satisfaction in an outpatient hand surgery office: A comparison of english- and Spanish-speaking patients. *Qual Manag Health Care* 2015;24(4):183–9.
33. Lee S, Reichert H, Kim HM, et al. Patterns of surgical care and health disparities of treating pediatric finger amputation injuries in the United States. *J Am Coll Surg* 2011;213(4):475–85.
34. Mahmoudi E, Swiatek PR, Chung KC, et al. Racial Variation in Treatment of Traumatic Finger/Thumb Amputation: A National Comparative Study of Replantation and Revision Amputation. *Plast Reconstr Surg* 2016;137(3):576e–85e.
35. Willer BL, Mpodoy C, Tobias JD, et al. Association of Race and Family Socioeconomic Status With Pediatric Postoperative Mortality. *JAMA Netw Open* 2022; 5(3):e222989.
36. Willer BL, Mpodoy C, Tobias JD, et al. Racial Disparities in Pediatric Surgical Mortality Across the Spectrum of Socioeconomic Status. New Orleans, LA: Anesthesiol Annu Meet; 2021.
37. Azin A, Hirpara DH, Doshi S, et al. Racial Disparities in Surgery. *Ann Surg Open* 2020;1(2):e023.
38. Jawad MU, Bayne CO, Farhan S, et al. Prognostic factors, disparity, and equity variables impacting prognosis in bone sarcomas of the hand: SEER database review. *J Surg Oncol* 2021;124(8): 1515–22.
39. Schoenfeld AJ, Zhang D, Walley KC, et al. The influence of race and hospital environment on the care of patients with cervical spine fractures. *Spine J* 2016; 16(5):602–7.
40. Hauc SC, Junn A, Dinis J, et al. Disparities in Craniosynostosis Outcomes by Race and Insurance Status. *J Craniofac Surg* 2022;33(1):121–4.
41. Peck CJ, Pourtaheri N, Shultz BN, et al. Racial Disparities in Complications, Length of Stay, and Costs Among Patients Receiving Orthognathic Surgery in the United States. *J Oral Maxillofac Surg* 2021; 79(2):441–9.
42. Falcone M, Liu L, Farias A, et al. Evidence for racial/ethnic disparities in emergency department visits following breast cancer surgery among women in California: a population-based study. *Breast Cancer Res Treat* 2021;187(3):831–41.
43. Ko N, Snyder F, Raich P, et al. Racial and Ethnic Differences in Patient Navigation: Results from the Patient Navigation Research Program. *Cancer* 2016; 122(17):2715–22.
44. Marrast LM, Zallman L, Woolhandler S, et al. Minority physicians' role in the care of underserved patients: Diversifying the physician workforce may be key in addressing health disparities. *JAMA Intern Med* 2014;174(2):289–91.
45. Takeshita J, Wang S, Loren AW, et al. Association of Racial/Ethnic and Gender Concordance Between Patients and Physicians With Patient Experience Ratings. *JAMA Netw Open* 2020;3(11):e2024583.
46. Komaromy M, Grumbach K, Drake M, et al. The Role of Black and Hispanic Physicians in Providing Health Care for Underserved Populations. *N Engl J Med* 1996;334(20):1305–10.
47. Street RL, O'Malley KJ, Cooper LA, et al. Understanding concordance in patient-physician relationships: Personal and ethnic dimensions of shared identity. *Ann Fam Med* 2008;6(3):198–205.
48. Saha S, Komaromy M, Koepsell TD, et al. Patient-physician racial concordance and the perceived quality and use of health care. *Arch Intern Med* 1999;159(9):997–1004.

49. Seible DM, Kundu S, Azuara A, et al. The Influence of Patient – Provider Language Concordance in Cancer Care : Results of the Hispanic Outcomes by Language Approach (HOLA) Randomized Trial. *Int J Radiat Oncology Biol Phys* 2021;111(4):856–64.
50. Shah RF, Mertz K, Gil JA, et al. The importance of concordance between patients and their subspecialists. *Orthopedics* 2020;43(5):315–9.
51. Meghani SH, Brooks JM, Gipson-Jones T, et al. Patient-provider race-concordance: Does it matter in improving minority patients' health outcomes? *Ethn Health* 2009;14(1):107–30.
52. AAMC. Fall applicant, Matriculant, and Enrollment data Tables. AAMC (2020) 2021.
53. Mankin HJ. Diversity in orthopaedics. *Clin Orthop Relat Res* 1999;362:85–7. PMID.
54. Aagaard EM, Julian K, Dedier J, et al. Factors affecting medical students' selection of an internal medicine residency program. *J Natl Med Assoc* 2005;97(9):1264–70.