



Viewpoint

Health Disparities and Diversity Research Presented at the American Association of Hip and Knee Surgeons 2021 Annual Meeting

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The 2021 American Association of Hip and Knee Surgeons (AAHKS) annual meeting featured a variety of talks and posters involving diversity and health disparities. We at *Arthroplasty Today* believe this is important work for the growth of our field, and like the editorial team of *Journal of Arthroplasty*, we support the increase in interest in these topics [1]. By having an active approach to including these issues in hip and knee arthroplasty research projects, we as surgeons will be better able to help all patients achieve optimal outcomes. The following article contains a brief overview of these projects, which will hopefully encourage readers to pursue similar endeavors.

The 2021 AAHKS Business of Total Joint Replacement course, co-chaired by C. Lowry Barnes, MD, Michael Bolognesi, MD, and Craig Della Valle, MD, contained a session on diversity and the business of total joints. In this session, Muyibat Adelani, MD, spoke about the creation of the AAHKS Diversity Advisory Board with the purpose of increasing diversity among AAHKS members, providing opportunities for professional development, building mentoring programs, and preparing a diverse group of future AAHKS leaders. Kimberly Tucker, MD, spoke about challenges related to disparity of care, defining health disparities, and providing solutions for surgeons to care for under-resourced patients more effectively. Charles Nelson, MD, spoke about the business case for promoting diversity and inclusion, their roles in medicine as a whole, and the benefits of increasing diversity among industry consulting and design projects.

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Session 2 of the general session, “Race and Gender Disparities in Total Joint Arthroplasty”, moderated by Michael Bolognesi, MD, and Audrey Tsao, MD, contained 5 papers on this topic. Full abstracts for these papers can be found in the final annual meeting program (<https://meeting.aahks.org/program/>). “Lack of Demographic Information in THA/TKA Randomized Controlled Trial Publications” by Donnelly et al. is a review of randomized controlled trials involving total hip (THA) and knee arthroplasty (TKA) published in 4 major orthopedic journals [2]. The authors found only 5.6% of manuscripts mentioned race, and there was a lack of widespread inclusion of social determinants of health [2]. “Racial Differences in the Imaging Work-Up and Treatment of Hip and Knee Osteoarthritis” by Wu et al. is a retrospective review of over 100,000 patients with a diagnosis of hip or knee osteoarthritis treated at a tertiary care center and found that Black, Hispanic, and Asian patients were less likely to undergo total joint arthroplasty than white patients [3]. “Lower Rates of Ceramic Femoral Head Use in Non-White Patients: A National Registry Study” by Upfill-Brown et al. is a retrospective review of over 100,000 adult THA patients from the American Joint Replacement Registry and found that Black, Hispanic, Native American, and Asian patients had lower rates of ceramic head use than white patients despite the increasing popularity of ceramic femoral head use overall [4].

“New Patient Referral Patterns May Reflect Gender Biases” by Visser et al. is a retrospective chart review of new patient demographics for adult reconstruction and shoulder and elbow surgeons at a single academic institution [5]. They found that female surgeons had significantly fewer referrals from male providers than their male counterparts, as well as fewer internal referrals than male surgeons with similar experience and time at the institution [5]. “Discrepancies in Work-Family Dynamics between Male and Female Orthopedic Surgeons” by Ponzio et al. is a survey-based study of 347 orthopedic surgeons examining their demographics and work-family balance and found that female surgeons had a significantly lower salary than their male colleagues, as well as less likely to have an academic title or be involved in industry consulting or courses [6]. Female surgeons were more likely to be never married and have no children, while those female surgeons with children reported increased responsibility in parenting and household duties [6].

Symposium III of the General Session, “Caring for Diverse and High-Risk Patients: Surgeon, Health System, and Patient Integration”, was moderated by Kimberly Tucker, MD. An expanded version of this symposium will be published in the *Journal of Arthroplasty Proceedings* of the 2021 AAHKS Annual Meeting. Linda Suleiman, MD, presented “Treating Diverse Patient Populations: Navigating Racial/Ethnic Differences”, emphasizing the importance of recognizing the role of structural racism and the social determinants of health in the creation of health disparities in hip and knee replacement. Anna Cohen-Rosenblum, MD, presented “The Impact of Health Literacy in the Care of Hip and Knee Arthroplasty Patients”, discussing the effects of health literacy on postoperative outcomes, which demographic factors are associated with low health literacy, and possible solutions for surgeons to overcome this barrier. Ugo Ihekweazu, MD, presented “High-Risk Patients in the Setting of Private Practice”, reviewing the barriers these patients face in obtaining quality orthopedic care and how private practice surgeons can help reduce these disparities. Finally, James Huddleston, MD, presented “The Economics of the High-Risk Patient”, discussing a proposal for updated risk adjustment methodology in bundled payment models to financially incentivize surgeons, hospitals, and health insurance companies to care for these patients and work toward eliminating outcome disparities in high-risk patients.

There were also many posters presented at this year’s annual meeting that discussed topics of health disparity and diversity. Posters from the 2021 AAHKS annual meeting can be viewed online at <https://meeting.aahks.org>.

Broggi et al. presented “Rural Hospital Designation is Associated with Increased Complications and Costs after Primary THA”, a retrospective cohort study of approximately 18,000 patients from the Truven MarketScan database finding that rural patients had increased rates of prosthetic joint infection and dislocation or revision within 1 year compared with patients from urban areas [7]. Grits et al. presented “Neighborhood Socioeconomic Disadvantage as a Driver of High Healthcare Utilization after THA”, a retrospective analysis of over 2000 patients undergoing primary THA within a single health system and similarly finding that patients with a greater degree of socioeconomic disadvantage (as quantified by the Area Deprivation Index) had significantly higher odds of nonhome discharge, prolonged length of stay, and 90-day readmission than less socioeconomically disadvantaged patients [8].

Bedard et al. presented “What is the Impact of Socioeconomic Status on Mental and Physical Health of TKA patients?”, a retrospective review of 378 unilateral primary TKA patients [9]. They found that patients with the greatest degree of socioeconomic disadvantage (also using the Area Deprivation Index) had significantly lower mental health and physical health scores at 12 months postoperatively than less socioeconomically disadvantaged patients [9]. Luo et al. presented “Dual Eligibility THA Patients Have Higher Comorbidity Burdens Compared to Privately Insured Patients”, a retrospective case-control database study of approximately 3000 dual eligible patients (qualifying for both Medicare and Medicaid insurance) undergoing THA and over 300,000 private payer patients [10]. They found that dual-eligibility-status patients had medical comorbidities including but not limited to coronary artery disease, obesity, cerebrovascular disease, and so on, as well as tobacco use and drug and alcohol abuse, making them a greater financial liability to physicians and hospitals [10].

Lin et al. presented “Unmet Social Needs have Negative Impact on Health Outcomes in Management of Hip and Knee Conditions”, a cross-sectional survey study of 173 patients with hip or knee pain seen at an orthopedic clinic [11]. They found that experiencing unmet social needs such as housing, food, transportation, utilities, and interpersonal violence was associated with poorer joint health [11]. Kaidi et al. presented “Non-compliance with Preoperative

Education is Associated with Worse Outcomes after Arthroplasty”, a retrospective review of 376 patients who underwent TKA, unicompartmental knee arthroplasty, and THA at a single center [12]. They found that patients who did not complete preoperative education with the designated patient educator had significantly longer length of stay and decreased likelihood to be discharged home than patients who participated in preoperative education [12]. Taylor et al. presented “Outcomes of a Rapid Recovery Protocol for Total Joint Arthroplasty at a Safety Net Hospital”, a retrospective review of primary total hip and knee replacements done at a single safety net hospital comparing outcomes after standard ($n = 294$) and rapid recovery protocol ($n = 279$) [13]. They found that the rapid recovery protocol patients had reduced length of stay, reduced complications and readmissions, and increased same-day discharge [13].

Santana et al. presented “Regional Variability in Total Knee Arthroplasty Utilization in the U.S.”, a review of over 4 million patients undergoing primary TKA from the National Inpatient Sample database [14]. Their findings included that patients undergoing TKA in the Northeast were more likely to be white and have a higher income than patients in the East, South, and Central regions and also more likely to have a nonhome discharge than patients in the Pacific. Further findings with maps can be found on the electronic poster online [14]. Brodeur et al. presented “Socioeconomic Disparities in the Utilization of Primary Total Knee Arthroplasty”, a review of claims from a statewide database with logistic regression analysis to determine the effect of patient factors on the likelihood of patients with a diagnosis of primary osteoarthritis undergoing a TKA ($n = 313,794$) [15]. They found that white patients with osteoarthritis had a higher likelihood of undergoing TKA than all other racial groups analyzed and that patients with government insurance, one or more medical comorbidities, and increased social deprivation were less likely to undergo TKA [15].

Roberts et al. presented “Influence of Demographic and Socioeconomic Factors on Hospital Distance for Total Knee Arthroplasty”, a review of over 300,000 patients undergoing TKA from 2 different state databases and assessing hospital distance [16]. They found white patients were more likely to travel farther for their TKA than Black, Hispanic, or Native American patients and that patients with higher income, fewer medical comorbidities, and commercial insurance were also more likely to travel a longer distance [16]. Ramirez et al. presented “Changes in Patient Travel Burden from the Centralization of Revision Total Joint Arthroplasty”, a review of approximately 37,000 patients undergoing revision TKA or THA from a statewide database to investigate what would be the potential effects of centralizing revisions to higher volume hospitals [17]. They found that centralizing revision total joint arthroplasty to higher volume institutions would not result in an increased travel burden over 60 miles in most cases but also note that white and Hispanic patients in lower income rural areas may be more affected by centralization policies [17].

Cohen-Levy et al. presented “Race Is an Independent Predictor of Preoperative PROMs in Patients Undergoing TJA”, a retrospective review of over 3000 patients undergoing TKA or THA in a single health-care system [18]. They found that non-white patients had lower preoperative scores and less likely to achieve minimum clinically important difference (MCID) in the PROMIS PF10a score at 1 year than white patients [18]. Upfill-Brown et al. presented “Racial Disparities in Complications and Discharge Destination Following Total Joint Arthroplasty”, a retrospective review of over 500,000 TKA and THA patients from the American College of Surgeons National Surgical Quality Improvement Program database comparing 30-day outcomes [19]. They found that Black and Hispanic patients were more likely to have a major complication, venous thromboembolism, or experience nonhome discharge after

TKA and more likely to receive a blood transfusion, have a venous thromboembolism, or experience nonhome discharge after THA than white patients [19].

Wyles et al. presented “Depression and Anxiety Are Associated with Increased Revisions and Complications Following THA”, a retrospective review of over 10,000 patients at a single academic institution undergoing primary or revision THA [20]. They found that depression/anxiety were present in about 30% of primary and revision THA patients preoperatively and that patients with depression/anxiety were at higher risk for infection, revision, and reoperation after both primary and revision THA than patients without prior anxiety/depression [20]. Albright et al. presented “Mental Health Status and BMI Do Not Affect 1-Year HOOS Jr. and KOOS Jr. MCID”, a retrospective review of approximately 1500 patients undergoing primary THA or TKA at a single outpatient surgery center [21]. They found no significant difference in patient outcome score MCID comparing patients with body mass index over vs under 40 or patients with and without a mental health diagnosis [21].

Charalambous et al. presented “Healthcare Utilization and Disparities During COVID-19 Telemedicine Visits for Osteoarthritis”, a retrospective review of patients visiting a tertiary referral center with a primary diagnosis of hip or knee osteoarthritis, including 904 telemedicine and 13,000 in-person visits [22]. They found that patients in the telemedicine group were younger, less likely to be Black, lived in a different county, had a lower median income, and had a higher cancellation/no-show rate than those in the in-person group [22]. Finally, Shah et al. presented “Evaluating Perceptions of Smart Phone Use for the Active and Passive Collection of Health Data”, a survey study of 488 patients recruited from an online survey tool assessing their comfort with activities related to smartphone use in a clinical orthopedic setting [23]. They found that the majority of patients were comfortable with sending information on their social and physical activity to their orthopedic doctor via their smart phone and that older patients and those with a lower education level were less likely to be comfortable with this due to concerns over data privacy and phone battery life [23].

We encourage AAHKS members and the readers of *Arthroplasty Today* to continue research in health disparities, social determinants of health, and diversity in gender, race, ethnicity, and sexual orientation as they affect our patient population and the orthopedic surgery workforce. Prioritizing these research topics is an important step in improving patient care and overcoming health and outcome disparities. In addition, we must embrace change by including those who have been excluded in the past in our research and our workforce. Finally, showing the world this focus on adult reconstruction disparities research will lead to the much-needed growth and diversification of our specialty by helping to recruit the best and the brightest orthopedic surgeons from all walks of life.

Conflicts of interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: A. Cohen-Rosenblum receives financial or material support from JBJS; is in the editorial or governing board of *Arthroplasty Today* and *Journal of Arthroplasty*; and is a part of the AAHKS nominating committee, AAHKS young arthroplasty group, and RJOS education committee.

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