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Quality Appraisal and Risk of Bias Assessment

A risk of bias assessment was performed for each study using the following criteria: (1) Was the selection of patients for inclusion in the study unbiased? (2) Was there systematic exclusion of any single group? (3) Was there significant attrition rate of study participants? (4) Was there a clear description of methodology and techniques in the study? (5) Was there unbiased and accurate assessment of outcomes and complications in the study? (6) Were potential confounding variables and risk factors identified and examined using acceptable statistical techniques? (7) Was the duration of follow-up reasonable for investigated outcomes? (8) Was the population included in the study described adequately? (9) Was the included participant group similar to the population at large that is affected by the condition studied? (10) Were the inclusion and exclusion criteria clearly defined? (11) Was the funding source and role of funder clearly defined in the study? (12) Were there any conflicts of interest identified or easily apparent? Only studies meeting at least ten of the twelve quality criteria above were included for analysis.

Table 1A: Study design and results for all included studies

Author	Study Design (Level of Evidence)	Study Question	Demographics	Study Methods	Study Results
Adelani MA, Archer KR, Song Y, et al	Retrospective cohort study (3)	Determine if there is an association between black race and adverse outcome when medical conditions were adjusted for after TJA	The patient population consisted of 585,269 patients—206,570 patients (35%) who had undergone total hip arthroplasties and 378,699 (65%) who had total knee arthroplasties. The average age was 67 years. Women comprised 61% of the patient population. Ninety-three percent of patients were white, and seven percent were Black. Hypertension was the most common medical comorbidity, affecting 54% of the total patient population.	Data on 585,269 patients from the Nationwide Inpatient Samples were assessed by multivariable logistic regression analysis. Available data from 1998 through 2005 was analyzed. The outcomes of interest in this study were in-hospital postoperative complications and mortality.	Black patients were more likely to have both hypertension and diabetes than whites ($P < 0.0001$). Obesity was nearly twice as prevalent among Black patients compared to whites ($P < 0.0001$). Black patients were more likely to have Medicaid insurance coverage than whites, more likely to be treated in a teaching hospital, and more likely to be treated in hospitals with significantly lower annual case volumes ($P < 0.0001$ each). Multivariable logistic regression analysis demonstrated a significant association between Black race and

			The majority of patients (88%) were treated in an urban hospital; approximately 41% were treated in teaching hospitals.		complication after arthroplasty [OR 1.20, 95% CI 1.07–1.35]. Obesity [OR 1.23, 95% CI 1.11–1.37] and treatment in a teaching hospital [OR 1.45, 95% CI 1.23–1.71] were also associated with postoperative complication. Female patients were slightly less likely to have complications [OR 0.94, 95% CI 0.88–1.00], as were those with hypertension [OR 0.91, 95% CI 0.86–0.96]. Black race also had a significant association with death [OR 1.65, 95% CI 1.33–2.05]. Medicaid insurance [OR 1.97, 95% CI 1.49–2.59], diabetes [OR 1.37, 95% CI 1.16–1.62] and treatment in a teaching hospital [OR 1.17, 95% CI 1.02–1.35], and treatment in an urban hospital

					[OR 1.38, 95% CI 1.13–1.68] were also associated with postoperative mortality. Female gender [OR 0.56, 95% CI 0.50–0.63] and hypertension [OR 0.45, 95% CI 0.39–0.50] were both negatively associated with death after joint arthroplasty. This showed that when hypertension, diabetes, and obesity were accounted for, Black race remained associated with both postoperative complications and mortality.

Adelani MA, Keller MR, Barrack RL, et al	Retrospective cohort study (3)	The purpose of this study is to evaluate the impact of hospital volume on racial differences in outcomes following total joint arthroplasty (TJA).	A total of 340,577 patients were included in the study, 27,206 of which were African American and 23,589 of which were Hispanic. Mean age was 67.5 years old, 63.9% were female, and 20% were of low socioeconomic status.	Data was analyzed from the Healthcare Cost and Utilization Project State Inpatient Databases for patients who underwent TJA between 2006 and 20013 in New York and Florida. Complications, readmissions, and emergency department (ED) visits within 90 days of surgery were compared by hospital volume to generate relative risks.	Race/ethnicity was not associated with readmission following THA. African American race was associated with readmission following TKA (relative risk [RR] 1.16). African American race was associated with ED visits following THA (RR 1.29) and TKA (RR 1.33). Hispanic ethnicity was associated with ED visits following TKA (RR 1.15), but not THA. These associations did not change after adjusting for hospital volume.

Alley MC, Mason AS, Tybor DJ, et al	Prospective observational study (2)	The purpose of this study is to analyze the disparities in the utilization of total joint arthroplasty (TJA) specific to non-English speaking Chinese patients in the US.	269 patients of a single surgeon at a single institution were surveyed from October 2012 to February 2013. Of the 269 patients, 65 were Chinese. 85 of the patients were recommended surgery, 26 of which were Chinese.	The survey given was designed to evaluate the following: e demographics, lifestyle, socioeconomic status (SES), language, culture, and familiarity with surgery. Recommendation for TJA was based on the patient's physical limitations and limitations on daily living as a result of degenerative joint disease (DJD) symptoms, along with radiographic evidence. The surgeon graded the symptom severity at the clinic visit using 12-Item Short-Form Health Survey scores and Harris Hip Scores (HHS)	Of the patients for which surgery was recommended, 76% of Caucasian patients elected for surgery versus 35% of Chinese patients. Chinese ethnicity was shown to be a significant predictor of surgical decision after controlling for age, gender, socioeconomic status, and education ($p<.05$).

				or Knee Society Scores (KSS).	
Amen TB, Varady NH, Rajaee S, et al	Retrospective cohort study (3)	The purpose of this study was to investigate trends in racial disparities in total joint arthroplasty (TJA) utilization and perioperative metrics between black and white patients in the United States (US) from 2006 to 2015.	A total of 5,442,646 patients who underwent elective primary total knee arthroplasty (TKA), and 2,644,193 patients underwent elective primary total hip arthroplasty (THA) were included in the study. 92% of patients were white and 8% of patients were black. Black patients undergoing	The authors analyzed the National Inpatient Sample (NIS) database to identify black and white patients who underwent primary total knee arthroplasty (TKA) or primary total hip arthroplasty (THA) between 2006 to 2015. Utilization rates, length of stay in the hospital (LOS),	From 2006 to 2015, there were persistent white-black disparities in standardized utilization rates and associated hospital length of stay (LOS) for both TKA and THA ($p < 0.001$ for all; Ptrend < 0.05 for all). There were also worsening disparities in the rates of discharge to a facility (rather than home) after both TKA (white compared with black: 40.3% compared with 47.2% in 2006

			TKA and THA were more likely to be female, younger, and have a higher Elixhauser Comorbidity Index (ECI) than white patients (P < 0.001 for all). Black patients undergoing TKA and THA were also more likely to have a lower median household income, less likely to be insured by Medicare, more likely to be insured by Medicaid, and more likely to be treated in an urban teaching hospital (p < 0.001 for all).	discharge disposition, and inpatient complications and mortality were trended over time. Linear and logistic regression analyses were performed to assess changes in disparities over time.	and 25.7% compared with 34.2% in 2015, Ptrend < 0.001) and THA (white compared with black: 42.6% compared with 41.7% in 2006 and 23.4% compared with 29.2% in 2015, Ptrend < 0.001) and worsening disparities in complication rates after TKA (white compared with black: 5.1% compared 6.1% in 2006 and 3.9% compared with 6.0% in 2015, Ptrend < 0.001). When controlling for age, sex, smoking status, medical comorbidities, hospital characteristics, socioeconomic status, and insurance type, black race was associated with increased mortality (odds ratio [OR] = 1.49, 95% confidence interval [CI] = 1.13-1.96, P = 0.005), total

					complications (OR = 1.32, 95% CI 1.27-1.37, P < 0.001), discharge to a facility (OR = 1.65, 95% CI 1.58-1.72, P < 0.001), and longer LOS (adjusted mean difference [AMD] = 0.26 day, 95% CI 0.23-0.28 day, P < 0.001) for TKA. Similarly, for THA, black race was associated with increased mortality (OR = 2.30, 95% CI 1.73-3.06, p < 0.001), total complications (OR = 1.39, 95% CI 1.32-1.47, P < 0.001), discharge to a facility (OR = 1.71, 95% CI 1.63-1.80, P < 0.001), and longer LOS (AMD = 0.30-day, 95% CI 0.27-0.33-day, P < 0.001).

Ang DC, Tahir N, Hanif H, et al	Retrospective cohort study (3)	Do racial differences in clinical appropriateness for surgery exist in a sample of primary care clinic patients with moderate to severe symptomatic hip or knee osteoarthritis ?	684 potential candidates for TJA were included in the study, 62% of which were white, 38% of which were African American. 78% had knee osteoarthritis (OA) and 22% had hip OA. Mean age was 64 years old.	Primary outcome was clinical appropriateness for TJA consideration. A validated TJA appropriateness algorithm was used to derive an appropriateness factor using the following variable: age (50-70 or >70 years), Charlson comorbidity (≤ 1 or > 1), Western Ontario and McMaster Universities OA Index (WOMAC) pain and physical function, and adequacy of previous medical management.	The mean overall WOMAC score was 56 ± 14, suggesting moderately severe OA. There were no significant racial group differences (p=.3) in the proportions of patients deemed clinically appropriate for TJA.

Arroyo NS, White RS, Gaber-Baylis LK, et al	Retrospective cohort study (3)	The purpose of this study was to examine socioeconomic, racial and ethnic disparities among patients who receive elective total knee arthroplasty (TKA) within the Medicare population.	A total of 739,857 patients who underwent elective TKA and met inclusion and exclusion criteria were included within the study. The average age of the overall patient population was 67.31 years (standard deviation [SD] 10.10), with patients readmitted at 30- and 90-days being slightly older (69.23 years [SD 10.81] and 68.34 years [SD 10.85]) Females comprised 63.0% of the overall population, with 58.3% of the 30-day readmitted cohort, and 59.6% of the 90-day readmitted cohort. White patients	The authors analyzed data from the State Inpatient Databases (SID) of the Healthcare Cost and Utilization Project (HCUP) to evaluate inpatient discharge records from California, Florida, New York, and Maryland from 2007 to 2014. Inclusion criteria included patients greater than 18 years of age who underwent TKA surgery. Patients were excluded for missing demographic data, death during the index hospitalization, insufficient follow-up time after initial hospitalizatio	Black patients experienced higher 30-day (Odds Ratio [OR] = 1.20, 95% Confidence Interval [CI] = 1.15–1.25) and 90-day (OR = 1.08, 95% CI 1.05–1.11) readmissions when compared to white patients. Compared to patients with private insurance, Medicaid and Medicare patients had a higher likelihood of 30-day readmissions (OR = 1.17, 95% CI 1.13-1.20 and OR = 1.23, 95% CI 1.17-1.28), with similar results for 90 days (OR = 1.46, 95% CI 1.38-1.54 and OR = 1.58, 95% CI 1.46-1.71). When compared to patients in the lowest median income quartile (first quartile), patients in the higher median income quartiles all had reduced adjusted OR of

			comprised 76.4% of the overall population, with 74.7% of the 30-day readmission cohort, and 75.6% of the 90-day readmission cohort. Black patients overall represented 7.4% of the population, with 9.5% of the 30-day readmissions cohort, and 8.9% of the 90-day readmission cohort. Medicare patients represented 60.1% of the overall population, with 68.8% of the 30-day readmissions cohort, and 66.0% the 90-day readmissions cohort. Medicaid patients represented 3.1% of the overall	n. Demographic characteristics and medical comorbidities were compared for all patients who underwent TKA during their initial inpatient hospitalizatio n and at both 30- and 90-day readmission time points. Chi-square or Fisher exact test analysis was used to test statistical significance for categorical variables, including insurance status, readmission rates, readmission diagnoses, and demographic data. Continuous variables were compared using analysis of variance or Kruskal-	readmissions. Patients treated in hospitals with higher procedure volumes (second, third, and fourth quartiles) had a lower likelihood of readmission compared to those treated at hospitals in the lowest quartile for procedure volume for white, black, Hispanic, and other race/ethnicity, Medicare- and Medicaid-insured patients continued to have higher odds of readmission. For both 30 and 90-day readmission, black patients continued to have increased odds of readmission following elective TKA when compared to white patients. Black patients with Medicare and private insurance had higher 30-day readmission rates than white patients with Medicare and

			population and 4.1% of both 30- and 90-day readmission cohorts.	Wallis tests for non-normally distributed variables. Marginal logistic regression models were used to examine the effect of markers of racial and seriocomic disparities on readmissions.	private insurance; Medicaid trended positive. Diagnosis of wound infection was the most common cause of readmission for the overall study population and the number one reason for readmission among Medicaid patients. Compared to private insurance patients, Medicaid (OR = 1.22, 95% CI 1.04–1.43 and OR = 1.32, 95% CI 1.15–1.51) and Medicare (OR = 1.09, 95% CI 1.00–1.19 and OR 1.17, 95% CI 1.08–1.26) patients had increased odds of readmission for wound infection at 30 and 90 days, respectively.

Aseltine RH, Wang W, Benthien RA, et al	Retrospective cohort study (3)	The purpose of this investigation to determine whether comprehensive efforts to reduce hospital readmissions following total joint arthroplasty (TJA) have impacted racial and ethnic disparities in readmission rates during the period from 2005 to 2015.	A total of 83,887 patients underwent primary TJA within a Connecticut hospital between 2005 and 2015 with a total of 102,510 admissions during that time frame. Of the patients who were readmitted within 30-days of their index procedure, the mean age of these was 66.3 years, and the majority of admissions involved white patients (91.6%) and patients covered by Medicare (54.0%) and private insurers (40.6%). 60% of patients included within the study were women.	The authors analyzed data from the Connecticut's Acute Care Hospital Inpatient Discharge Database (HIDD) to evaluate patient who underwent TJA from 2005 to 2015 and compared patients who were readmitted and not readmitted to the hospital within 30 days of surgery. Inclusion criteria included patients who were greater than 18 years of age and underwent TJA for a primary diagnosis of osteoarthritis (OA), rheumatoid arthritis (RA), aseptic necrosis or congenital	The all-cause 30-day readmission rate declined from 5.1% in 2005 to 3.6% in 2015. Logistic models indicated that black patients (Odds Ratio [OR] = 1.68, $P < 0.0001$) and Hispanic patients (OR = 1.48, $P < 0.0001$) were significantly more likely to be readmitted within 30 days of discharge following a total joint arthroplasty than white patients over the study period. The readmission rates for black patients increased compared with those for white patients from 2005 through 2008 and decreased relative to those for white patients from 2009 to 2015 (OR = 0.24, $P = 0.030$).

				joint deformity. Exclusion criteria included those who died while hospitalized following the index admission. Statistical analysis was conducted using logistic regression models for clustered data using generalized estimating equations (GEEs).	
Bass AR, Mehta B, Szymonifka J, et al	Prospective cohort study (2)	The purpose of this investigation was to determine whether racial disparities in total knee replacement (TKR) failure are explained by poverty.	A total of 4,062 patients who underwent primary unilateral TKR and who were enrolled in the Hospital for Special Surgery (HSS) Knee Replacement Registry were included in the study. The	The authors included black and white New York state residents who enrolled in a single-institution TKR registry from 2008 to 2012 within the study. Patients were linked by geocoded	A total of 3% of patients (122/4,062) required revision a median of 454 days (range 215-829) after their index procedure. Black patients were a higher risk of requiring revision (Hazard Ratio [HR] = 1.69, 95% CI 1.01-2.81). Predictors of

			mean age was 68.4 ± 10 years, 64% of patients were female, 8% lived in census tracts with > 20% of the population under the poverty line and 9% were black. The mean follow-up was 5.3 years.	addresses to residential census tracts. Multivariable Cox regression was used to assess predictors of TKR revision. Multivariable logistic regression was used to analyze predictors of TKR failure, defined as TKR revision in New York state within 2 years after surgery or as HSS TKR quality of life score of "not improved" or "worsened" 2 years after surgery.	TKR revision after multivariable analysis were noted to be younger age (HR = 0.80, 95% CI 0.74-0.88, P < 0.001), male sex, and use of a constrained prosthesis (HR = 2.31, 95% CI 1.42-3.76, P < 0.001). TKR failure occurred in 7% of patients (200/2,832) who completed 2-year surveys with risk factors for TKR failure being non-osteoarthritis TKR indication, low surgeon volume of < 50 cases a year (OR = 3.00, 95% CI 1.56-5.76, P = 0.001) and low HSS Expectations Survey score (OR = 0.84, 95% CI 0.75-0.94, P = 0.002). Black race was not a risk factor for TKR failure and community poverty was not associated with either TKR

					revision or failure.
Berges IM, Juo YF, Ostir GV, et al	Retrospective cohort study (3)	The purpose of this study was to examine gender and ethnic differences in functional status and living setting for patients after hip arthroplasty.	A total of 69,793 patients who received inpatient medical rehabilitation after hip arthroplasty between 2002 and 2003 were included. The average age of all patients included within the study was 71.7 ± 9.3 years. 46,387 (66.5%) of all patients were female and 40,139 (53%) were married. 63,061 (90.4%) were white, 4,969 (7.1%) were	The authors analyzed the Uniform Data System for Medical Rehabilitation (UDSMR) to identify patients who had undergone hip arthroplasty surgery between 2002 and 2003. Inclusion criteria included patients who had undergone hip arthroplasty surgery and those greater than 50 years of age. Exclusion	Whites had the highest mean Functional Independence Measure (FIM) change (mean [SE], 23.42 [0.18]), Asians had the lowest mean FIM change (mean [SE] 22.00 [0.53]), and women had a higher mean FIM change (mean [SE], 22.79 [0.23]) than men. Black (Odds Ratio [OR] = 1.23, 95% Confidence [CI] 1.07-1.41, P < 0.05) and Hispanic (OR = 1.51, 95% CI 1.15-1.99, P < 0.05) patients had

			black, 1,390 (2.0%) were Hispanic and 373 (0.5%) were Asian.	criteria included those who had missing gender or race information, those who did not live at home prior to admission and patients who had transferred from an outside facility. Demographic variables were compared by ethnic group using univariate statistics for continuous variables and Chi squared test for categorical variables. Logistic regression was used to examine the effect of race, ethnicity and gender on discharge home vs. not home.	statistically significant higher odds of home discharge compared with white patients. Asian patients did not have a statistically significant higher odds of home discharge compared with white patients. Male gender (OR = 1.08, 95% CI 1.01-1.17, P < 0.05), being married (OR = 2.42, 95% CI 2.24-2.61, P < 0.05), and higher discharge FIM ratings (OR = 1.10, 95% CI 1.10 = 1.11, P < 0.05) were all associated with greater odds of home discharge. Older age was also associated with lower odds of home discharge (OR = 0.97, 95% CI 0.97-0.98, P < 0.05).

Byrne MM, Souchek J, Richardson M, et al	Cross-sectional study (4)	The purpose of this study was to determine whether there are ethnic differences in preferences for surgery versus medical treatment of knee osteoarthritis (OA).	A total of 391 adult patients were included within the study. The average age of all participants was 55.03 ± 14.33. 130 (33.3%) of patients were white, 130 (33.3%) were Hispanic and 131 (33.4%) were African American (AA). 227 (58.06%) of patients were female and 270 (69.05%) had a diagnosis of knee OA. More white participants were in the middle- and higher-income ranges, with African American participants having the lowest average income. Hispanics were more likely to be in the lowest education class than were African	The authors performed cross-sectional in-person interviews using conjoint analysis methodology which involved individuals making choices between alternative hypothetical scenarios for medical or surgical treatment of knee OA. Half of the cohort included individuals over the age of 20 who were recruited through random digit dialing in Harris County, TX and the remainder included patients with diagnosed knee OA being treated at a single institution in	AA patients were significantly less likely to choose surgery when compared to white patients (Odds Ratio [OR] = 0.63, 95% Confidence Interval [CI] 0.42-0.93). Women and older individuals were also less likely to choose surgery when compared to males and younger patients (OR = 0.69, 95% CI 0.51-0.94] and OR = 0.98, 95% CI 0.97-0.99). Larger reductions in negative symptoms with surgery significantly increased the likelihood of patients choosing to undergo knee replacement surgery.

			Americans or whites.	Houston, TX. Logistic regression was used to perform an analysis of the obtained conjoint data.	

Cai X, Cram P, Vaughan-Sarrazin M	Retrospective cohort study (3)	Cohort 1: can a hospital outcome measure of risk-adjusted mortality or complication rate within 90 days of primary TKA be directly used to profile hospital quality of care? Cohort 2: are African Americans more likely to receive TKAs at low-quality hospitals compared to Caucasian patients?	The first cohort included 610,285 TKA admissions to 3101 hospitals during a 3-year period. Only Caucasian and African American elective TKA patients were retained. The second cohort included 91,599 patients admitted to 2842 hospitals. 5.3% of patients (n=4894) were African American. 64.7% of patients in cohort 2 were female.	For cohort 1, primary outcome was complications and mortality within 90 days after TKA for each admission. Outcomes included: sepsis, hemorrhage, pulmonary embolism, deep vein thrombosis, severe wound infection requiring readmission, and death. Rankings were established based on the ratio of observed adverse outcomes (O) to expected adverse outcome rate (E). Rankings were defined as high-quality (O/E ratio < 20th percentile), low-quality (O/E ratio > or equal to 80th	The c-statistic for the cohort 1 risk adjustment model was .7, which was comparable to those in validated models of short-term inpatient mortality based on Medicare claims and suggests appropriate statistical performance of the model. In cohort 2, for patients undergoing TKAs, African American was not a predictor of admission to high-quality hospitals (p=.34) but was associated with admissions to low-quality hospitals (p<.001).

				percentile), and indeterminate quality (O/E ratio in between the two). Hospitals treating patients in cohort 2 were ranked into one of the three groups from the 90-day postoperative outcome measure established in cohort 1.	

Cavanaugh AM, Rauh MJ, Thompson CA, et al	Retrospective cohort study (3)	The purpose of this study was to determine if preoperative physical function is associated with race or ethnic disparities in functional outcomes after total knee arthroplasty (TKA) among older women.	A total of 10,325 women from the WHI who underwent primary TKA were included, with 9528 (92.3%) self-identifying as white, 622 (6.0%) as black, and 175 (1.7%) as Hispanic. The mean (SD) age at TKA was 74.6 (5.5) years for white women, 73.1 (5.2) years for Hispanic women, and 73.1 (5.3) years for black women. Compared with white women, black and Hispanic women were less likely to be married, had lower income, lower educational attainment, higher body mass index (BMI), and lower participation in moderate to	The authors analyzed data from the Women's Health Initiative (WHI) to evaluate preoperative physical function in postmenopausal women from 1993 to 2005. The RAND 36-Item Health Survey (RAND-36) physical function scale was used to measure preoperative physical function. Demographic information was collected through questionnaires administered at the WHI baseline. Race/ethnicity was categorized according to self-identified racial or ethnic group and was limited to the	During the decade prior to TKA, black women had lower physical function scores than white women (mean difference, −5.8, 95% Confidence Interval [CI] −8.0 - −3.6]) and higher odds of experiencing difficulty walking a single block (Odds Ratio [OR] = 0.86, 95% CI 1.57-2.21), walking multiple blocks (OR = 2.14, 95% CI 1.83-2.50), and climbing 1 flight of stairs (OR = 1.81, 95% CI 1.55-2.12). After TKA, black women continued to have lower physical function scores throughout the decade (mean difference, −7.8 95% CI −10.8 - −4.9). Hispanic women had similar PF scores to white women during the pre-TKA and post-TKA periods.

			vigorous physical activity.	responses of non-Hispanic white, non-Hispanic black or African American, or Hispanic or Latina. Physical function 1 year prior to surgery for each participant was estimated using generalized linear mixed modeling.	

Cavanaugh AM, Rauh MJ, Thompson CA, et al	Prospective cohort study (2)	The purpose of this investigation was to evaluate racial and ethnic disparities in utilization of total knee arthroplasty (TKA) in relation to demographic, health, and socioeconomic status variables.	A total of 102,767 women enrolled in the Women's Health Initiative (WHI) who underwent primary total knee arthroplasty were included. The average follow-up time was 9.7 years for all participants. 88.0% of women were white, 8.7% black, and 3.3% Hispanic. Black and Hispanic women tended to be younger and had lower income, educational attainment, and (Neighborhood socioeconomic status) NSES compared with white women.	The authors analyzed data from the WHI to evaluate racial and ethnic disparities in utilization of TKA in postmenopausal women from 1993 to 2005. WHI participants with linked Medicare data were included within the study population. Inclusion criteria included women who self-identified as white, black or Hispanic. Exclusion criteria included patients whose original reason for Medicare eligibility was disability benefits or end-stage renal disease (ESRD), women with	Black women had the greatest prevalence of moderate to severe joint pain (28%) followed by Hispanic (25.6%) and white women (23.2%). Black women also had the highest prevalence of mobility disability (33.8%) followed by Hispanic (28.7%) and white women (19.5%). TKA utilization was higher among white women (10.7/1,000 person-years) compared to black (8.5/1,000 person-years) and Hispanic women (7.6/1,000 person-years). Among women with health indicators for TKA including diagnosis of arthritis, moderate to severe joint pain, and mobility disability, black and Hispanic women were significantly less

				prior TKA. Age, race/ethnicity, income, and education were ascertained by questionnaire at WHI enrollment. Baseline characteristics were compared by racial/ethnic groups using Chi-square and analysis of variance tests for categorical and continuous variables. To examine relative disparities in primary TKA utilization, time to first TKA was analyzed using Cox proportional hazards (PH) regression models.	likely to undergo TKA after adjusting for age (Black: Hazard Ratio [HR] = 0.70, 95% Confidence Interval [CI] 0.63-0.79) and Hispanic: HR = 0.58, 95% CI 0.44- 0.77). Adjusting for socioeconomic status modestly attenuated the measured disparity, but significant differences remained (Black: HR = 0.75, 95% CI 0.67-0.89 and Hispanic: HR = 0.65, 95% CI 0.47-0.89).

Cavanaugh AM, Rauh MJ, Thompson CA, et al	Prospective cohort study (2)	The purpose of this study was to evaluate if differences in rehabilitation utilization in patients after total knee arthroplasty (TKA) contribute to racial disparities in postoperative functional outcomes.	A total of 8,349 women who underwent primary TKA between 2006 and 2013 were included. 92.8% of patients were white and 7.3% were black. Black women who underwent TKA tended to be younger (P < .0001), less likely to be married (P < .0001), and more likely to live alone (P < 0.001). Black women had lower incomes, education, and neighborhood socioeconomic status than white women (P < 0.0001 for each).	The authors analyzed data from the WHI to evaluate rehabilitation usage in postmenopausal women who underwent primary TKA between 2006 and 2013. Rehabilitation utilization was determined through linked Medicare claims data. Post-acute discharge destination including home, skilled nursing facility, and inpatient rehabilitation facility, facility length of stay, and number of home health physical therapy (HHPT) and outpatient physical therapy (OPPT) sessions were	Non-Hispanic black women had worse physical function (median score, 65 vs 70) and higher likelihood of disability (13.2% vs 6.9%) than non-Hispanic white women before surgery. After undergoing elective TKA, black women were less likely than white women to be discharged home postoperatively (35.8% vs 46.1%, P < .0001). Proportions of women discharged to inpatient rehab facilities (IRF) settings were similar between racial groups (43.7% vs 43.4%), but black women were more likely to be discharged to a Skilled Nursing Facility (SNF) than white women (20.6% vs 11.0%, P < 0.0001). A higher proportion of black women

				compared between racial groups.	received HHPT services (52.6% vs 47.8%; P < 0.02), and in those receiving HHPT, black women received more visits (median number of visits, 10 vs 9; P < 0.001). There was no significant difference in those who received OPPT, but for those who did receive OPPT, black women received more visits than white women (median number of visits, 17.5 vs 16.0; P = 0.01).
Chang HJ, Mehta PS, Rosenberg A, et al	Prospective observational study (2)	To examine differences by race/ethnicity and gender in patients' concerns regarding total knee replacement (TKR)	Thirty-seven people, all actively considering TKR, participated in the 6 focus groups between 1998 and 1999 (Table 1). Participants ranged in age from 39 to 76 years (mean age 60 years); 12 were men and 25 were women.	Focus groups of patients actively considering TKR were conducted. Discussion included patients' questions and concerns regarding TKR. The software ATLAS.ti was used to tabulate themes by race/ethnicity	White American men demonstrated the greatest amount of factual background information. Nearly all had researched TKR, had actively chosen their physician, and had researched other available options. They were generally more prepared to discuss TKR in terms of

			Twenty identified themselves as white Americans and 17 as African Americans. Of the white Americans, 5 said their culture and upbringing was mainstream white American but their ethnicity included Latino (n = 4) and Native American (n = 1). Because results for those 5 individuals were similar to those of the other white Americans, the results we present are based on analysis comparing 20 white Americans with 17 African Americans	and gender. Concerns raised by focus group participants were compared with thematic content from patient joint replacement information materials. This comparison used patient literature from 3 high-volume academic TKR centers, the Arthritis Foundation, and the American Academy of Orthopedic Surgeons	information already acquired. Questions concerning alternatives to TKR (other options) were most frequent (18%), followed by concerns regarding pain medication and addiction possibilities (17%). White American women asked 57% of the preoperative questions (n = 34), covering the widest range of topics, including knee anatomy, devices and device technology, employment issues, physician trust, possibility of pain medication addiction, lifespan of the prosthesis, other options, and optimal timing of TKR. This was the only group that asked about potential drawbacks to surgery. African American women

					expressed a desire to know the criteria for TKR and reasons for their own candidacy for TKR. They also mentioned finances. White American men expressed interest in devices and device technology, whereas African American men expressed concern over financial issues, specifically their health insurance coverage of TKR.
Chen J, Rizzo JA, Parasuraman S, et al	Retrospective cohort study (3)	The purpose of this study is to examine the racial disparities in receiving total hip or knee arthroplasty, specifically in relation to admission source.	Patients eligible for THA totaled 150,525 and those eligible for TKA totaled 366,085. Patients were separated into racial groups as follows: white, African American, and Hispanic.	The Nationwide Inpatient Sample (NIS) of the Healthcare Cost and Utilization Project (HCUP) administered by the Agency for Healthcare Research and Quality databases were used. Analyses were performed to determine	African Americans were least likely to have elective admissions ($p<.001$). After controlling for covariates, African Americans remained significantly less likely to have THR and TKR procedures compared with Whites. The odds ratio of African Americans for THR was 0.57 ($p<.001$) and for

				likelihood to receive TJA based on race and patient factors.	TKR was 0.76 (p<.001). The odds ratio of Hispanics for THR was 0.49 (p<.001).
Chisari E, Grosso MJ, Nelson CL, et al	Retrospective cohort study (3)	The purpose of this study is to compare differences in perioperative complications and functional outcomes between African American and Caucasian patients undergoing THA and TKA.	5284 patients were included in the study, of which 1041 were African American (24.5%). Mean age was 66 in Caucasian patients and 64.2 in African American patients. Female gender consisted of 51% and 63% of Caucasian and African American patient subgroups, respectively. African American patients had a lower mean Charlson	A consecutive series of all primary THA and TKA patients at a single institution from 2015 to 2018 was used for data collection. Data collected on patients included demographics, comorbidities, 90-day complications, readmissions, Veterans Rand 12-Item Health Survey (VR-12), Hip disability Osteoarthritis	Compared with white patients, African American patients had lower preoperative HOOS/KOOS (p< .001) and mental VR-12 scores (p< .001). However, there was no statistically significant difference at 1 year in HOOS/KOOS, mental VR-12, or physical VR-12 scores. When controlling for demographics and medical comorbidities, African American patients had increased

			comorbidity score compared to white patients (p<.001)	Outcome Score (HOOS), and Knee injury and Osteoarthritis Outcome Scores (KOOS). They were compared between African American and Caucasian patients. A multivariate analysis was performed to control for confounding variables	rehabilitation facility discharge (p< .001), but no difference in readmissions or complications.

Collins JE, Deshpande BR, Katz JN, et al	Retrospective cohort study (3)	To determine race- and sex-specific rates of total knee arthroplasty (TKA) and to document independent effects of demographic factors on TKA incidence in a population with radiographically confirmed osteoarthritis (OA)	Thirty-five percent of subjects were under 65 years of age at 84 months follow-up, 41% were male and 26% were non-Whites. 970 (51%) knees were Kellgren Lawrence (KL) grade 2, 676 (35%) knees were KL 3, and 269 knees (14%) were KL 4. Eighty-one percent of subjects had at least some college education	Authors used data from the Osteoarthritis Initiative, a US-based, multicenter longitudinal study of knee OA. They selected subjects with radiographic symptomatic OA at baseline and determined TKA incidence rates (ratio of TKAs to time at risk for TKA) over 84 months of follow-up. They used multivariable Poisson regression to identify independent associations between demographic factors and TKA utilization.	During the study period there were 223 TKAs among 1,915 subjects for an incidence of 1.9% (95% confidence interval [95% CI] 1.7-2.2%). The overall rate was 1.9% (95% CI 1.5-2.3%) in men versus 2.0% (95% CI 1.7-2.3%) in women, and 2.2% (95% CI 1.9-2.6%) in whites versus 1.0% (95% CI 0.7-1.5%) in nonwhites. We observed a statistically significant interaction between sex and age (stratified at <65 and ≥65 years at end of follow-up), wherein male sex was associated with decreased risk of TKA for younger participants (relative risk [RR] 0.32) but not for older participants. Nonwhite race was associated with a decreased risk of TKA for

					both younger (RR 0.32) and older (RR 0.43) participants.

Cram P, Hawker G, Matelski J, et al	Retrospective cohort study (3)	The purpose of this investigation was to evaluate differences in total joint arthroplasty (TJA) outcomes in white and black men and women using a large international joints registry.	A total of 62,075 patients who underwent total knee arthroplasty (TKA) and 39,334 patients who underwent total hip arthroplasty (THA) were identified. For TKA 35.3% were white men, 57.2% white women, 1.9% black men, and 5.6% black women. For THA 41.1% were white men, 51.7% white women, 3.4% black men, and 3.9% black women. Male TKA recipients were slightly younger than female TKA recipients among both whites and blacks (P<.001 for both). Male TKA recipients had slightly lower BMI than their	The authors analyzed data from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) to identify black and white adults who underwent primary total knee arthroplasty (TKA) and total hip arthroplasty (THA) from 2010 to 2013. The outcomes evaluated were surgical complications including mortality, pulmonary embolism, wound infection, sepsis, blood loss requiring transfusion, myocardial infarction, pneumonia, acute renal failure and incidence of	White women were significantly more likely to experience an adverse outcome when compared to white men (16.5% and 14.1%; P < 0.001) and black women were significantly more likely to experience an adverse outcome when compared to black men (18.3% and 14.3%; P = 0.002). The higher rate of the composite complications in women as compared to men is almost entirely explained by higher rates of blood loss requiring transfusion in women (14.9% vs 12.2% for white women and white men, 16.4% vs 11.7% black women and men; P < 0.001 for both). White men and black men who underwent TKA were significantly less likely than white

			female counterparts (P<.001 for both white and black) and men were significantly more likely to smoke than women (P<.001 for both). Both black men and black women had clinically significantly higher rates of many comorbidities including hypertension, diabetes, and obesity (P<.001).	discharge to a nursing home. Patients were excluded from the analysis if they underwent TJA for acute fracture or active infection, patients with disseminated cancer and patients who were critically ill at the time of surgery. Bivariate methods (Chi squared test and Kruskal-Wallace test) were used to examine unadjusted differences in demographics, clinical risk factors and comorbidities between each group. Multiple logistic regression was used to calculate risk standardized rates of outcomes.	and black women to be discharged to a nursing home (P< 0.001 for both). White women hand slightly lower incidence of pulmonary embolism and bleeding compared to black women (P < 0.001 for both). White men and white women were less likely to be discharged to a nursing home or skilled care than black men and black women (16.5% vs 18.9% for white and black men, P = 0.05: 25.0% vs 28.2%, P < 0.001 for white and black women). Hospital readmission within 30-days of TKA was more common for blacks when compared to whites of the same sex. White men and black men had statistically similar rates of adverse outcome

					for both TKA and THA while white women had lower complication rates than black women for both TKA and THA. In adjusted analyses for both TKA and THA white men and white women were both less likely to be discharged to a nursing home when compared to blacks. Readmission rates were generally similar for white men compared to black men and white women compared to black women for both TKA and THA.

Cusano A, Venugopal V, Gronbeck C, et al	Prospective cohort study (2)	The objective of this study was to present contemporary national data on the state of racial and ethnic disparities pertaining to primary total knee arthroplasty (TKA) in the USA.	In total, 262,954 patient records were analyzed, with racial identification available on 230,712 patients (87.7%). White patients accounted for 72.5% of all TKA procedures.	The 2011–2017 National Surgical Quality Improvement Program was used to capture all patients who underwent primary TKA. The study outcomes were differences in demographic, comorbidity burden, perioperative factors, procedure utilization, hospital length of stay (LOS), and 30-day outcomes. The five major minority groups as defined by the National Institutes of Health were compared to non–Hispanic Whites.	There were higher rates of diabetes, hypertension, anemia, and prolonged surgery times among racial and ethnic minorities ($p < 0.001$). African Americans were likely to have higher rates of tobacco smoking and CHF ($p < 0.001$). After controlling for baseline differences, African Americans and Hispanics/Latinos had higher odds for experiencing complications and readmissions ($p < 0.001$). All racial and ethnic groups, except Asians, had longer LOS ($p < 0.001$). Asian patients had significantly lower rates of readmissions, reoperations, and overall complications ($p < 0.001$).

Dangelmajer S, Yang A, Githens M, et al	Retrospective cohort study (3)	The purpose of this study was to evaluate how socioeconomic factors affect the utilization of total hip arthroplasty (THA) versus hemiarthroplasty (HA) for treatment of femoral neck fractures.	A total of 38,222 patients who underwent THA or HA for treatment of femoral neck fractures from 2009-2010. 76.8% were white, 3.6% were black, 3.4% were Hispanic, 1.3% were Asian or Pacific Islander and 1.6% were Native American. Of the patients included, 3659 underwent THA and 34,563 underwent HA. 62.8% of patients underwent surgery in a nonteaching hospital while 35.8% underwent surgery at a teaching hospital.	The authors analyzed data from the National Inpatient Sample (NIS) database to identify patients who underwent THA or HA for treatment of a femoral neck fracture. Patients were excluded if they sustained fractures at the base of the femoral neck or if the patient underwent open reduction internal fixation (ORIF).	Older patient age was associated with lower odds of receiving THA (OR = 0.944, 95% Confidence Interval [CI] 0.941-948, P < 0.0001). Asian or Pacific Islander patients had statistically lower rates of THA compared to Caucasian patients (OR = 0.507, 95% CI 0.330-0.778, P value = 0.0019). Sex and other race/ethnicities were not significantly associated with odds of receiving THA. No statistical difference was identified in the rates of THA according to median zip code income.

Dharmasukrit C, Chan SYS, Applegate RL, et al	Retrospective cohort study (3)	The purpose of this investigation was to assess race and ethnicity as a potential moderator of the associations of frailty and functional status within arthroplasty outcomes.	A total of 349,165 patients who underwent primary total hip arthroplasty (THA), or total knee arthroplasty (TKA) were included. 130,022 (37.2%) underwent THA and 219,143 (62.8%) underwent TKA. The average age for TKA was 66.41 and 64.55 for THA. 62.0% of patients who underwent TKA were female compared to 54.8% for THA. The average Body Mass Index (BMI) of patients who underwent TKA was 33.98 ± 6.91 kg/m2 and 31.16 ± 6.42 kg/m2.	The authors analyzed the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) to identify patients who underwent either THA or TKA between 2011 and 2017. Inclusion criteria included patients undergoing primary elective THA or TKA, race or ethnicity was coded as white, black or Hispanic. Exclusion criteria included patients undergoing bilateral procedures, patients with fractures, disseminated cancer or those who were critically	The mean frailty score for white patients was significantly less than the mean frailty scores for both black patients ($P < 0.001$) and Hispanic patients ($P < 0.001$) for TKA and less than the mean frailty score for black patients who underwent THA ($P < .001$). A higher percentage of Hispanics were non-independent in preoperative functional status compared to white and black patients for both surgery types ($P < 0.001$). Black (2.92 days ± 2.29 for TKA and 2.74 days ± 2.15 for THA) and Hispanic patients (2.85 days ± 2.63 for TKA and 2.68 days ± 5.05 for THA) had significantly longer average LOS compared to white patients (2.67 days ± 2.52 for TKA and 2.48

				ill. Frailty was assessed using the modified frailty index. Regression analyses were conducted to examine associations connecting frailty and functional status with 30-day readmission, adverse discharge, and length of stay (LOS). Further analyses were conducted to investigate race and ethnicity as potential moderators of these relationships.	days ± 2.81 for THA). For each additional point increase in frailty score, the odds of readmission increased by 23% after TKA (Odds Ratio [OR] = 1.23, 95% Confidence Interval [CI] 1.19-1.27, P < 0.001) and by 26% after THA (OR = 1.26, 95% CI 1.21-1.32, P < 0.001). Non-independent functional status was also significantly associated with 30-day readmission for both surgery types, with nearly twice the odds of readmission after TKA (OR = 1.87, 95% CI 1.60-2.19, P < 0.001) and over twice the odds of readmission after THA (OR 2.01, 95% CI 1.73-2.34, P < 0.001). Black patients had 25% higher odds of 30-day readmission in the when

					controlling for frailty when compared to white patients (OR = 1.25, 95% CI 1.13-1.34, P < 0.001) and 30% higher odds (OR = 1.30, 95% CI 1.20-1.40, P < .001) when controlling for functional status after TKA. A 1-item increase in frailty score was associated with 20% increased odds of an adverse discharge for TKA (OR = 1.20, 95% CI 1.18-1.22, P < 0.001) and 23% increased odds of an adverse discharge for THA (OR = 1.23, 95% CI 1.20-1.26, P < 0.001). Non-independent functional status was also found to be significantly associated with over twice the odds of adverse discharge compared to patients with independent functional status for both TKA

					(OR = 2.59, 95% CI 2.38-2.83, P < 0.001) and THA (OR = 2.98, 95% CI 2.72-3.27, P < 0.001). A 1-item increase in the frailty score was associated with a 4% longer LOS for TKA (Incidence Rate Ratio [IRR] = 1.04, 95% CI 1.04-1.05, P < 0.001) and 5% longer LOS for THA (IRR = 1.05, 95% CI 1.04-1.05, P < 0.001). Non-independent functional status was associated with a 22% increase in LOS after TKA (IRR = 1.22, 95% CI 1.20-1.25, P < 0.001) and 25% increase in LOS after THA (IRR = 1.25, 95% CI 1.22 1.28, P < 0.001).

Dunlop DD, Manheim LM, Song J, et al	Prospective observational study (2)	Are there disparities according to racial/ethnic groups in the use of knee and hip arthroplasty in patients younger than 65 years old?	16,713 patients aged 51 years or older were included in the study, 2262 of which were black, 1292 or which were Hispanic, and 13,159 of which were white.	Primary outcome is self-reported 2-year use of arthritis related hip or knee surgery. Variables studied are demographics (race/ethnicity, gender, age), health needs (arthritis, chronic diseases, obesity, physical activity, functional limitations), and medical access (income, wealth, education, and health insurance). Longitudinal data analyses were used to account for biennial observations over time.	Black adults under 65 years old report similar age/gender adjusted rates of hip/knee arthritis surgeries (95% confidence interval 0.87-2.38). Black patients aged 65 and older report significantly lower rates (95% confidence interval 0.16-0.55) of said surgeries compared with white patients. Both under 65 years old and older Hispanic adults report lower utilization rates, however neither was statistically significant.

Dunlop DD, Song J, Manheim LM, et al	Retrospective cohort study (3)	The purpose of this study is to assess racial disparities in patients receiving total joint arthroplasty (TJA) in patients older than 69 years.	There were 6159 patients included in the study, aged 69 to 103 years old.	Public use data from 1993 to 1995 was analyzed from the Asset and Health Dynamics Among the Oldest Old (AHEAD). Primary outcome is self-reported 2-year use of any arthritis related joint replacement. Independent variables studied included demographics, health needs (arthritis, medical conditions, functional health), and economic access (income, assets, education, and health insurance).	Compared with older white patients, older Black and Hispanic patients were less likely to receive joint replacement surgery (95% CI 0.2-0.71).

Elsharyda h A, Embabi AS, Minhajud din A, et al	Retrospec tive cohort study (3)	Is there a difference in perioperative care and postoperative complications in total joint arthroplasty based on race?	102,122 patients were included in the study, 8,028 of which were African American. Mean age before matching was 62.08 years old in African American patients and 66.37 years old in white patients.	The American College of Surgeons-National Surgical Quality Improvement Program database was used for patient data acquisition. Type of anesthesia (general vs neuraxial) and postoperative complications were evaluated before and after creating a 1:3 matched sample of African American vs White patients based on propensity scores.	African American patients were younger (p<.001) and had a lower Charlson comorbidity Index score (p<.001). There was no significant difference in the type of anesthesia used between races. African American patients had a higher rate of 30-day postoperative complications before matching (3.08 vs. 2.20%, p < 0.001) and after matching (3.63 vs. 2.33%) (OR 1.58, 95% CL 1.13-2.21, p = 0.007).

Ezomo OT, Sun D, Gronbeck C, et al	Retrospective cohort study (3)	The purpose of this investigation was to evaluate the state of racial and ethnic disparities in total hip arthroplasty (THA).	A total of 134,961 patients who underwent elective THA from 2011 to 2017 with racial data available were identified. Non-Hispanic white patients comprised 74.5% of all THA procedures. Compared with white patients, Asian patients were more likely to be older, have male gender, have a lower BMI, and be a nonsmoker (P < .001). In contrast, all other racial or ethnicity groups were likely to be younger, have a higher BMI, and smoke tobacco than whites.	The authors analyzed the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) to identify patients who underwent elective THA from 2011 to 2017. The minority groups non-Hispanic black or African American, Hispanic or Latino, Asian, American Indian or Alaska Native, and Native Hawaiian or Pacific Islander were compared with non-Hispanic whites. The primary outcomes were in the differences in demographic characteristics	Blacks and Hispanics or Latinos were also more likely to be on chronic steroids and require functional assistance than whites (P < .001). Diabetes, hypertension, chronic obstructive pulmonary disease, anemia, dyspnea, and CKD were the most common comorbidities present in the study cohorts, with blacks demonstrating the highest prevalence of these comorbidities (P < .0001). All groups, except Asian and Hawaiians or Pacific Islanders, were more likely to require an LOS >2 days. In addition, blacks were more likely to develop any complication (Odds Ratio [OR] = 1.15, 95% confidence interval [CI] 1.01-

				, comorbidities, perioperative characteristics, THA utilization, length of stay (LOS), and 30-day adverse events including mortality, readmission, reoperation and complications.	1.30) including medical complications (OR = 1.2, 95% CI 1.00-1.45) and surgical complications (OR = 1.21, 95% CI 1.04-1.40). Hispanics or Latinos were more likely to develop surgical complications (OR = 1.28, 95% CI: 1.00 - 1.64). American Indians or Alaska Natives were more likely to undergo reoperations (OR = 1.91, 95% CI 1.23-2.97). No differences were observed in 30-day readmission or mortality rates among the different groups.

Fang M, Hume E, Ibrahim S	Retrospective cohort study (3)	The purpose of this investigation was to determine how racial disparities in discharge destination after total knee arthroplasty (TKA) is affected by the initiation of Bundled Payments for Care Improvement (BPCI).	A total of 2,276 patients who underwent primary TKA at the University of Pennsylvania Penn Presbyterian Hospital between 2014 and 2017 were included. 48.2% of patients were white, 43.8% were African American (AA) and 8.0% were classified as other. 62.7% of all patients were female.	The authors analyzed the Vizient database to identify patients who underwent primary TKA from 2014 to 2017 at the University of Pennsylvania Penn Presbyterian Hospital in Pennsylvania, PA. Inclusion criteria included patient who underwent primary TKA and patients age greater than 18 years. Exclusion criteria included patients who underwent emergent surgery, those with acute fracture or active infection and those who underwent bilateral TKA. Paired t tests were used to compare differences in	There was a statistically significant decrease in patient discharge to Skilled Nursing Facility (SNF) over time with 75% of patients undergoing primary TKA being discharged to SNF in 2014 compared to 20% in 2017 ($P < 0.05$). There was a corresponding increase in discharge to home with or without home health over the same time period (25% 2014 vs. 80% in 2017, $P < 0.05$). AA patients who underwent TKA were significantly younger than other races (average ages of AA, white, and other were 61.9, 64.4, and 64.0, respectively, $P < 0.05$). AA and other race TKA recipients were more likely to have Medicaid compared to

				disposition among different races. Linear regression was used to plot trends in discharge destination.	white patients (22.4% vs. 4.3%, $P < 0.05$). African American TKA patients tended to have more diabetes mellitus (DM), congestive heart failure (CHF), and renal failure than white patients. AA patients had significantly higher discharge to SNF than whites and others (49.5% vs. 30.1% and 34.6%, $P < 0.05$). Compared to AA patients, white patients and those of other race/ethnicity were more likely to be discharged to home with or without home health services (59.7% and 58.7% vs 42.2%, $P < 0.05$). 90-day readmissions rates were 5.5% for AA patients, 3.4% for white patients, and 3.3% patients who classified as other. Surgical causes of readmission were significantly

					higher in white patients compared to AA patients or other (45.9% vs. 21.8% and 16.7%, P < 0.05). There was no difference in mortality among white, AA, and other race. The average length of stay for white patients was significantly lower than for AA and other race/ethnicity recipients (2.5 days vs. 3.0 and 2.9 days, P < 0.05).
George J, Navale SM, Schiltz NK, et al	Retrospective cohort study (3)	This study examines which gender-racial group and age group has the highest rate of AKA from septic and aseptic complications of TKA.	Of all AKAs identified in the database, 9733 AKAs were the result of complications of TKA (septic complications = 8104, aseptic complications = 1629).	The National Inpatient Sample (NIS) data from 2000 to 2011 was used to identify AKAs resulting from complications of TKA. Standardized AKA rates were calculated for different age and gender-racial groups by dividing	After adjusting for age and comorbidities, black men had the highest rate of AKA after TKA (adjusted rate in black men = 578 AKAs per 100,000 TKAs, standardized rate ratio [SRR] = 4.32 [confidence interval {CI}, 3.87– 4.82], p<.001). Black men also had the highest rate of AKA after septic

				the number of AKAs in each group with the corresponding number of TKAs. Standardized rate ratios were calculated after adjusting for demographics and comorbidities.	complications of TKA (p<.001). The adjusted rates of AKA were higher in patients younger than 50 years (adjusted rate = 473, SRR = 3.14 [CI, 2.94–3.36], p<0.001) and older than 80 years (adjusted rate = 297, SRR = 1.85 [CI, 1.76–1.95], p<.001).

Goodman SM, Mandl LA, Parks ML, et al	Retrospective cohort study (3)	The purpose of this study was to determine if race and socioeconomic factors at the individual level are associated with patient-reported pain and function 2 years after TKA. It also aims to determine the interaction between race and community poverty and patient reported pain and function 2 years after TKA.	The study cohort consisted of 4035 patients who underwent TKA, were enrolled in a hospital-based registry between 2007 and 2011, provided 2-year outcomes, and lived in New York, Connecticut, or New Jersey. 5% of patients who completed 2 years follow up were black.	The primary outcome was the association of race and socioeconomic factors on patient-reported outcomes after TKA. Baseline data collected on patients included age, sex, BMI, ethnicity (non-Hispanic or Hispanic), race, insurance status (Medicare, Medicaid, or other), and education (some college or above, or no college). Patient reported measures collected included preoperative Hospital for Special Surgery (HSS) Expectations score, baseline and 2-year Knee	Race, education, patient expectations, and baseline WOMAC scores are all associated with 2-year WOMAC pain and function, however, are not of clinical significance. White and black patients with less than 10% poverty have similar pain and function 2 years after TKA. In census tracts with greater than 40% poverty, black patients score worse than whites for WOMAC pain (p=.03) and function (p=.01).

				Osteoarthritis Outcomes (KOOS) pain score, and KOOS function score from which the Western Ontario and McMaster Universities OA Index (WOMAC) was derived.	

Goodman SM, Mehta B, Zhang M, et al	Prospective cohort study (2)	The purpose of this study was to determine if socioeconomic factors such as poverty mediates racial disparities in health outcomes after total hip arthroplasty (THA) and confound analyses of differences between blacks and whites.	A total of 4,170 THA cases within the cohort that met inclusion and exclusion criteria. 4,025 (97%) of patients were white and 145 (3%) were black. The average age of white patients who underwent THA was 65.42 (10.98) and 61.69 (11.23) for black patients. Compared with whites, blacks were younger, more likely to be female, and had higher BMI, higher hospital expectations scores, and more comorbidities. Blacks had lower educational attainment and were more likely to be insured by Medicaid.	All patients undergoing THA in a single, high-volume orthopaedic hospital between 2007 and 2011 were included within the study. Registry data was collected at baseline and at 2 years after THA. Inclusion criteria included patients age greater than 18 years and had and identified race. Patients were excluded if they underwent surgical intervention for treatment of fracture, were undergoing revision or bilateral THA or had contralateral THA or TKA within 2 years of the index procedure.	Mean WOMAC pain and function scores at baseline and 2 years were seven points lower (worse) for blacks than for whites ($P < 0.0001$). Compared with blacks and whites from wealthier neighborhoods, both blacks and whites from impoverished neighborhoods with > 10% Medicaid coverage had worse baseline pain (blacks 52.8 versus 43.8 for whites, $P = 0.02$; whites 55 versus 54.8, $P = 0.004$) and worse baseline function (blacks 49.06 versus 40.05, $P = 0.003$; whites 58.8 versus 50.8, $P < 0.001$). Blacks and whites achieved similar improvements in pain and function from baseline to 2 years. The change in WOMAC pain was 426 24 for blacks versus 40 ± 19 for whites (P

				Patient reported outcome measures included the hospital THA Expectations Survey23 and the Hip Osteoarthritis Outcomes Survey (HOOS), from which we derived the WOMAC pain and function scores. Models incorporating individual and census tract data and analyzed interactions between race and percent of population with Medicaid coverage and its association with 2-year patient-reported outcomes.	= 0.14), and the change in WOMAC function was 42 ± 24 for blacks versus 41 ± 19 for whites (P = 0.35). More blacks than whites lived in neighborhoods with 20% or greater of the population below the poverty level (30% versus 3%; P < 0.0001), and more blacks than whites lived in neighborhoods with 10%or greater of the population with Medicaid insurance coverage. Disparities in 2-year Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain and function were increased in communities with high census tract Medicaid coverage. For blacks in these communities, 2-year WOMAC function scores were predicted to

					be 25.54 points lower (80.42 versus 85.96) compared with blacks in less deprived communities, a difference not observed among whites.

Groeneveld PW, Kwoh CK, Mor MK et al	Retrospective cohort study (3)	To measure these differences using a well-validated survey instrument and to determine if the differences could be explained by racial variation in disease severity, socioeconomic factors, literacy, or trust.	The final survey cohort comprised 909 primary care patients with chronic knee or hip OA who identified themselves as either white or African American. African American patients were younger, predominantly from Philadelphia, less likely to be married, more likely to have household incomes below the poverty level, and less likely to have received an associate degree or other higher education degree than white enrollees. More African American respondents (42%) than white respondents (32%) reported	Detailed demographic, clinical, psychological, and social data were collected from 909 male patients (450 African American, 459 white) ages 50-79 years with moderate or severe osteoarthritis (OA) of the hip or knee receiving primary care at 2 veterans affairs medical centers were reviewed. The previously validated Joint Replacement Expectations Survey was used to assess expectations for pain relief, functional improvement, and psychological well-being after joint replacement	Among knee OA patients (n = 627), the unadjusted mean expectation score (scale 0-76) for African American patients was 48.7 versus 53.6 for white patients (mean difference 4.9, $P < 0.001$). For hip OA patients (n = 282), the unadjusted mean expectation score (scale 0-72) for African Americans was 45.4 versus 51.5 for whites (mean difference 6.1, $P < 0.001$). Multivariable adjustment for disease severity, socioeconomic factors, education, social support, literacy, and trust reduced these racial differences to 3.8 points (95% confidence interval [95% CI] 1.2, 6.3) among knee OA patients and 4.2 points (95% CI 0.4, 8.0) among hip patients.

			receiving disability payments due to their knee/hip OA ($P < 0.001$)		
Gungor S, Fields K, Aiyer R, et al	Retrospective cohort study (3)	To estimate the risk of developing moderate-to-severe persistent postsurgical pain (PPP) after primary total knee arthroplasty (TKA)	Patients with and without minimum a 3-month postoperative NRS pain score were mostly similar with respect to baseline NRS pain scores, demographics, and comorbidities. Exceptions included patients with postoperative follow-up data	Data were collected via hospital arthroplasty registry and chart review. The risk of moderate-to-severe PPP, defined as ≥4 on the numerical rating scale (NRS) at minimum of 3 months post-surgery, was calculated. Multivariable	The risk of PPP after TKA was 31.3% (95% confidence interval [CI]: 27.5-35.0) (n = 578). Every 2-point increase in baseline NRS was associated with 1.66 (95% CI: 1.37-2.03) times the odds of developing PPP ($P < .001$). African Americans (vs whites) had 1.82 (95% CI: 1.03-

			with better ASA status, were less likely to use tobacco, more likely to have had simultaneous bilateral TKA, and had slightly longer lengths of hospital stay.	logistic regression was used to estimate the association of patient demographics, diagnoses, length of hospital stay, and preoperative NRS with the odds of developing PPP. Exploratory, simple logistic regression was used to estimate the association of perioperative factors with the odds of developing PPP on a subset of patients (n = 72)	3.22) times the odds of developing PPP (P = .040). Exploratory analysis suggested that the adductor canal saphenous nerve (vs femoral nerve) blocks were associated with 2.87 (95% CI: 1.00-8.26) times the odds of developing PPP (P = .049)

Gwam C, Rosas S, Sullivan R, et al	Retrospective cohort study (3)	To assess temporal trends, primary indications, patient-level demographics, region and hospital type for all patients receiving primary total knee arthroplasty between 2009 and 2015.	There was a total of 4,283,387 TKA procedures performed from 2009 to 2015, 62.3% of which were women. Median age was 66 years old.	The National Inpatient Sample Database (NIS) was used to identify all patients who underwent a TKA between 20019 and the third quarter of 2015. Various analyses were used to assess trends, explore categorical variables, and continuous variables in the data set. Patient-level demographics included in the study were age, race, gender, health status, and median income quartile.	TKA utilization increased between 2009 and 2015 (p<.001). Primary osteoarthritis was the primary indication in 98% of cases. There was an increase in minority representation among recipients, the most being in Black patients (+2.3%, p<.001). Black TKA recipients were younger and had lower median age adjusted Charlson Comorbidity index (CCI) (p<.001). Black recipients were most likely to be of the lowest 25% of median income than any other race (p<.001). The Midwest demonstrated the greatest increase in TKAs performed per 100,000 between 2009 and 2014. TKA volume also shifted toward urban teaching hospitals (p<.001).

Hanchate AD, Zhang Y, Felson DT, et al	Retrospective cohort study (3)	The purpose of this study is to estimate national total knee arthroplasty (TKA) rates by economic factors, and the extent to which differences in insurance coverage, income, and assets contribute to racial and ethnic disparities in TKA use.	The study included 55,469 person-year observations from 18,439 patients, 57% of which were women, and 14% were non-Hispanic Black. 663 patients had a TKA between 1998 and 2004.	Longitudinal Health and Retirement Study data was used for analysis. The primary outcome is a binary indicator of whether a patient received a primary TKA in the survey period. Access to health insurance was categorized in 7 groups, income was summed from all sources, and key demographics collected include age, gender, and race.	After adjusting for economic factors, racial/ethnic differences in TKA rates for women did not occur. Compared to white men, there remained a large deficit for black men ($p<.05$). Among patients between ages 47-64, compared with the privately insured, those who were uninsured were less likely (95% CI 0.4-0.92) and those with Medicaid were more likely (95% CI 1.03-2.26) to receive their first TKA.

Hausmann LRM, Brandt CA, Carroll CM, et al	Retrospective cohort study (3)	To examine black-white and Hispanic-white differences in total knee arthroplasty from 2001 to 2013 in a large cohort of patients diagnosed with osteoarthritis (OA) in the Veterans Affairs (VA) health care system	Compared to white veterans, black and Hispanic veterans were younger; more likely to have CCI scores ≥3; and more likely to have depression, PTSD, and alcohol use diagnoses. Compared to whites or Hispanics, blacks were more likely to be female, have drug use diagnoses, and report severe pain intensity, and were less likely to be overweight or obese (defined as BMI >25)	Data were from the VA Musculoskeletal Disorders cohort, which includes data from electronic health records of more than 5.4 million veterans with musculoskeletal disorders diagnoses. We included white (non-Hispanic), black (non-Hispanic), and Hispanic (any race) veterans, age ≥50 years, with an OA diagnosis from 2001-2011 (n = 539,841). Veterans were followed from their first OA diagnosis until September 30, 2013. As a proxy for increased clinical severity, analyses were also conducted for a subsample	Authors identified 12,087 total knee arthroplasty procedures in a sample of 473,170 white, 50,172 black, and 16,499 Hispanic veterans. In adjusted models examining black-white and Hispanic-white differences by year of OA diagnosis, total knee arthroplasty rates were lower for black than for white veterans diagnosed in all but 2 years. There were no Hispanic-white differences regardless of when diagnosis occurred. These patterns held in the specialty clinic subsample.

				restricted to those who saw an orthopedic or rheumatology specialist (n = 148,844). We used Cox proportional hazards regression to examine racial and ethnic differences in total knee arthroplasty by year of OA diagnosis, adjusting for age, sex, body mass index, physical and mental diagnoses, and pain intensity scores.	

Hausmann LRM, Mor M, Hanusa BH, et al	Prospective cohort study (2)	The purpose of this investigation was to examine whether orthopaedic surgeons are less likely to recommend total joint replacement (TJR) to African American (AA) patients compared to white patients with similar clinical indications and whether there are racial differences in the receipt of TJR.	A total of 457 patients who were seeking treatment for knee or hip osteoarthritis (OA) in Veterans Affairs (VA) orthopaedic clinics. 120 (26.3%) were African American and 337 (73.7%) were white. AA patients were younger, reported lower incomes, were less likely to be married or living with a partner, and were more likely to live alone (P < 0.01 for each). AA patients were also less likely than white patients to have adequate health literacy and reported less social support, less trust in their orthopedic surgeons, and lower quality of life on the mental	Patients aged 50 or older who were referred to the orthopaedic surgery clinic of two large, tertiary care VA hospitals in Pittsburgh, PA and Cleveland, OH for management of chronic hip or knee pain between 2005 and 2008 were included. Inclusion criteria were patients had to have chronic, frequent knee or hip pain based on the Arthritis Supplement of the National Health and Nutrition Examination Survey (NHANES) questions. They also had to have significant pain and functional difficulty	The overall rate of TJR recommendation was 19.5% (n = 89). The odds of receiving a recommendation for TJR were lower for AA than white patients (Odds Ratio [OR] = 0.55, 95% CI 0.32–0.93, P = 0.03). This difference persisted after adjusting for age, WOMAC Index, and whether patients were being treated for hip (vs. knee) osteoarthritis (OR = 0.46, 95% CI 0.26–0.83, P = 0.01). This difference was not significant after adjusting for patient preference for TJR (OR = 0.69, 95% CI 0.36–1.31, P = 0.25). 10.3% (n = 47) underwent hip or knee TJR within six months of study enrollment. Fewer AA patients had undergone TJR

			component of the Short Form 12 (SF-12) ($P < 0.01$ for each).	related to osteoarthritis, defined as a score of 39 or higher (possible range 0–100) on the Western Ontario and McMaster Universities Osteoarthritis (WOMAC) Index. Exclusion criteria included patients who had previously undergone total joint replacement (TJR) or had been diagnosed with inflammatory arthritis. AA and white patients were compared with respect to sociodemographic and clinical characteristics. Logistic regression analysis was used to	within 6 months of study enrollment when compared to white patients of similar age and disease severity (OR = 0.41, 95% CI = 0.16-1.05, P = 0.06). This difference became insignificant after adjusting for whether the patient had received a recommendation for the procedure at the index visit (OR = 0.57, 95% CI 0.21–1.54, P = 0.27).

				examine the relationship between race and each outcome.	

Hawkins K, Escoto KH, Ozminkowski RJ, et al	Retrospective cohort study (3)	The purpose of this study was to determine if disparities exist within osteoarthritis patients with AARP-branded Medicare supplement plan coverage provided by UnitedHealthcare.	2.2 million patients were eligible for the study, 529,652 (24%) of which had osteoarthritis (OA). Of these, 6.1% received a total hip arthroplasty (THA) or total knee arthroplasty (TKA). 70% of OA patients were female, and 77% were between ages 65-84 years old.	Patients were selected into the study if they had one or more health care claims with a primary diagnosis of OA at any time from 7/1/2006 to 6/30/2007. Various analyses were used to describe patients and their utilization of hip or knee replacement surgery, and eliminate confounding effects of variables such as demographics, socioeconomics, and health status.	Males were more likely than females to receive a replacement surgery by 6% ($p<.001$). Patients in minority ($p<.001$) or lower income neighborhoods ($p<.001$) were less likely to receive a THA or TKA. The largest disparities existed by residential location and comorbid condition.

Hinman AD, Chan PH, Prentice HA, et al	Retrospective cohort study (3)	The purpose of this investigation was to determine whether racial or ethnic disparities persist within a universally insured population of patients who received a total knee arthroplasty (TKA).	A total of 129,402 patients who received a total knee arthroplasty were included within the study. 68.8% of the patients were white, 16.2% were Hispanic, 8.4% were black and 6.6% were Asian.	The authors analyzed the United States (US) integrated health system's total joint replacement registry to identify patients age greater than 18 who underwent elective TKA from 2000 to 2016. Cases were excluded if they involved revision surgeries, prior surgery to the affected knee, prior infection involving the affected joint, same-day bilateral procedures or staged procedures occurring within 90 days of each other. Racial and ethnic differences in revision rates and 90-day postoperative	When compared to white patients, Asian (hazard ratio [HR] = 0.70, 95% Confidence Interval [CI] 0.60-0.83, P < 0.001) and Hispanic patients (HR = 0.85, 95% CI 0.77-0.95, P = 0.003) had a lower risk of all-cause revision, while black patients had a higher risk of all-cause revision (HR = 1.34, 95% CI 1.20-1.49, P < 0.001). When looking at aseptic and septic revision specifically, Asian patients had a lower risk of both aseptic (HR = 0.67, 95% CI 0.54-0.83, P < 0.001) and septic revision (HR = 0.78, 95% CI 0.60-0.99, P = 0.049). Hispanic patients had a lower risk of septic revision (HR = 0.69, 95% CI 0.57-0.83, P < 0.001) and black patients had a higher risk of

				events including readmission rates, emergency department (ED) visits, infection, venous thromboembolism, and mortality were analyzed using Cox proportional hazard and logistic regression models.	aseptic revision (HR = 1.61, 95% CI 1.42-1.83, P < 0.001). Asian patients had a lower likelihood of 90-day unplanned readmission (Odds Ratio [OR] = 0.89, 95% CI 0.79-1.00, P = 0.046) and 90-day VTE (OR = 0.59, 95% CI 0.45-0.78, P < 0.001) when compared to white patients. Black patients had a higher likelihood of readmission (OR = 1.13, 95% CI 1.02- 1.24, P = 0.015) and 90-day ED visit (OR = 1.31, 95% CI 1.23-1.39, P < .001) when compared to white patients. Hispanic patients also had a higher likelihood of post-operative ED visits (OR = 1.28, 95% CI 1.22-1.34, P < 0.001), but a lower likelihood of 90-day deep infection (OR = 0.42, 95% CI

					0.30-0.59, P < 0.001) when compared to white patients. No difference was observed for mortality when comparing minority patients to white patients.
Ibrahim SA, Hanusa BH, Hannon MJ, et al	Randomized controlled trial (1)	To examine the efficacy of a patient-centered educational intervention on patient willingness and the likelihood of receiving a referral to an orthopedic clinic.	There were no statistically significant differences between study arms in the following characteristics: Age, gender, educational level, employment status, living situation, household income, receipt of disability payment, arthritis self-efficacy	A total of 639 African American patients with moderate-to-severe knee OA from 3 Veterans Affairs primary care clinics were enrolled in a randomized, controlled trial with a 2 × 2 factorial design. Patients were shown a knee OA decision-	At baseline, 67% of the participants were definitely/probably willing to consider knee replacement, with no difference among the groups. The intervention increased patient willingness (75%) in all groups at 1 month. For those who received the decision aid intervention alone, the gains were sustained

			scores, health literacy level, severity of disease using the WOMAC index, quality of life using the SF-12, trust in physician or index of comorbidity	aid video with or without brief counseling. The main outcome measures were change in patient willingness and receipt of a referral to an orthopedic clinic. Also assessed were whether patients discussed knee pain with their primary care provider or saw an orthopedic surgeon within 12 months of the intervention.	for up to 3 months. By 12 months postintervention, patients who received any intervention were more likely to report engaging their provider in a discussion about knee pain (92% versus 85%), to receive a referral to an orthopedic surgeon (18% versus 13%), and for those with a referral, to attend an orthopedic consult (61% versus 50%). An educational intervention significantly increased the willingness of African American patients to consider knee replacement.

Ibrahim SA, Siminoff LA, Burant CJ, et al	Cross-sectional study (4)	The purpose of this study was to determine if African American (AA) patients differ from white patients with respect to their overall familiarity with joint replacement as an option, their perceptions of the risks and benefits associated with the procedure, and their "willingness" to consider joint replacement and to determine the factors that influence this relationship.	A total of 600 AA and white male patients age greater than 50 years with moderate-to-severe symptomatic knee or hip osteoarthritis (OA) who were receiving primary care at the Department of Veteran Affairs (VA) outpatient clinics between 1997 and 2000 were included. AA and white patients in this cohort were similar with respect to age (mean ± SD, 65 ±10 years versus 66 ± 19 years, P = 0.50). African Americans were less likely to be employed (8% versus 15%, P = 0.01) or married (39% versus 56%, P < 0.001) or to have attained a high school	The authors performed a cross-sectional survey of elderly, male, AA and white patients with moderate-to-severe symptomatic knee or hip osteoarthritis (OA) who were receiving primary care at the Department of Veteran Affairs (VA) outpatient clinics between 1997 and 2000. Inclusion criteria included patients being older than 50 years of age and endorsing moderate-to-severe pain for greater than 6 months (evaluated on the basis of the Lequesne Scale). The survey sought to assess patients'	AA and white patients in this cohort were similar with respect to severity of arthritis on the Lequesne Scale (mean ± SD, 11 ± 4 versus 11 ± 4, P = 0.22) and the WOMAC (mean ± SD, 46 ± 17 versus 45 ± 17, P = 0.32), and scores on the Charlson Comorbidity Index (mean ± SD, 2.3 ± 2 versus 2.5 ± 2, P = 0.24) and the GDS (mean ± SD 4.5 ± 3.4 versus 5 ± 3.8, P = 0.07). AA patients were less likely than white patients to have ever heard of joint replacement (81% versus 87%), but this difference was not statistically significant (P = 0.065). They were less likely than white patients to have had family or friends who had undergone joint replacement (52%

			education (43% of African Americans versus 29% of whites had not graduated high school, P < 0.001) and were more likely to report an annual household income of < $10,000 (41% versus 20%, P < 0.001).	familiarity with joint replacement surgery for OA, outcome expectations, and patient "willingness" to consider joint replacement. The Western Ontario and McMaster Universities (WOMAC) Index was used to assess severity of OA. The Charlson Comorbidity Index was used to assess overall disease burden and the Geriatric Depression Scale was used to screen for depression within each patient. Baseline comparisons between AA and white patients in the sample were performed using the chi-square test for	versus 78%, P < 0.001) or to report a good understanding of joint replacement as a form of treatment (44% versus 61%, P < 0.001). AA patients were more likely than whites to believe that the hospital course after surgery could last for > 2 weeks (45% versus 18%; P < 0.001). AA patients were more likely than whites to expect moderate or extreme pain (62% versus 42%; P < 0.001) and moderate-to-extreme difficulty with walking (64% versus 39%; P < 0.001) following joint replacement. When asked whether they would consider hip or knee replacement surgery if their pain were to become more severe and the doctor recommended it,

				categorical variables and the t-test for continuous, normally distributed variables. Bivariate associations between individual study outcome measures and ethnicity were examined using multivariate logistic regression models.	AA patients were more likely than white patients to respond "no" (Odds Ratio [OR] = 0.50, 95% Confidence Interval [CI] 0.30–0.84). After adjusting for outcome expectations postoperatively, the difference between AA and white patients in their "willingness" to consider joint replacement was no longer statistically significant suggesting that those differential expectations of postsurgical hospital course, pain, and function mediated the observed difference in the patient's "willingness" to undergo hip or knee replacement surgery.

Ibrahim SA, Stone RA, Han X, et al	Retrospective cohort study (3)	To examine racial/ethnic differences in mortality and morbidity following elective knee or hip arthroplasty	The mean ages of the patients who underwent knee and hip arthroplasty were 66 years and 63 years, respectively. Both subgroups were predominantly white, with black patients comprising 11.3% of the knee arthroplasty and 16.8% of the hip arthroplasty patients. Hispanics comprised <5% of each subgroup. This VA population included very few women. Twenty-one percent of the knee arthroplasty patients and 30.6% of the hip arthroplasty patients were current smokers.	Using information from the Veterans Administration National Surgical Quality Improvement Program database, data on 12,108 patients who underwent knee arthroplasty and 6,703 patients who underwent hip arthroplasty over a 5-year period were analyzed. Racial/ethnic differences were determined using prospectively collected data on patient characteristics, procedures, and short-term outcomes. The main outcome measures were risk-adjusted 30-day mortality and	Adjusted rates of both non-infection-related and infection-related complications after knee arthroplasty were higher among black patients compared with white patients (relative risk [RR] 1.50, 95% confidence interval [95% CI] 1.08-2.10 and RR 1.42, 95% CI 1.06-1.90, respectively). Hispanic patients had a significantly higher risk of infection-related complications after knee arthroplasty (RR 1.64, 95% CI 1.08-2.49) relative to otherwise similar white patients. Race/ethnicity was not significantly associated with the risk of non-infection-related complications (RR 0.97, 95% CI 0.68-1.38 in blacks; RR 1.18,

				complication rates.	95% CI 0.60-2.30 in Hispanics) or infection-related complications (RR 1.27, 95% CI 0.91-1.78 in blacks; RR 1.22, 95% CI 0.63-2.36 in Hispanics) after hip arthroplasty. The overall 30-day mortality was 0.6% following knee arthroplasty and 0.7% following hip arthroplasty, with no significant differences by race/ethnicity observed for either procedure.
Inneh IA, Clair AJ, Slover JD, et al	Retrospective cohort study (3)	The purpose of this paper is to analyze the factors that influence discharge destination following TJA.	There were a total 7924 TJA cases, of which 4836 (61%) were female, 785 (10%) were of low socioeconomic status, and 2770 (35%) were of nonwhite race/ethnicity.	Data on TJA patients at a single institution between 2011 and 2014 was analyzed. Evaluation of socioeconomic, geographic, and racial/ethnic factors associated with discharge destination to either home or institution	A total of 5088 (64%) cases were discharged to home and 2836 (36%) cases were discharged to institution. Significant predictors of discharge to an institution include low and middle SES (odds ratio [OR]: 1.27, 95% confidence interval [CI]: 1.02-1.57, p= .029; and OR: 1.26, 95% CI: 1.10-1.44, p=

				was performed.	.001), age (OR: 1.05, 95% CI: 1.049-1.060, p< .001), female gender (OR: 1.69, 95% CI: 1.52-1.89, p< .001) and TKA procedure (OR: 1.48, 95% CI: 1.33-1.64, p< .001). Patients of nonblack race/ ethnicity were more likely to be discharged home (white OR: 0.84, 95% CI: 0.72-0.98, p=.027; other OR: 0.80, 95% CI: 0.67-0.95, p=.009).

Jain NB, Higgins LD, Ozumba D, et al	Retrospective cohort study (3)	The purpose of this investigation was to determine whether total knee arthroplasty (TKA) rates increased in younger adults and older adults, whether utilization of TKA increased among minorities and whether more patients underwent surgery at high-volume hospitals.	A total of 443,008 patients who underwent primary total knee arthroplasty within the United States (US) were included. 89.8% of patients were white, 5.7% were black and 2.9% were Hispanic. 62.8% of patients were female. The average follow-up for patients within the study was 3.6 years.	The authors analyzed the National Inpatient Sample (NIS) database to identify patients who underwent primary TKA from 1990-2000. The study period from 1990 to 2000 was divided into 3 time periods (1990–1993 [period I], 1994–1997 [period II], and 1998–2000 [period III]). Bivariate analyses of demographic and procedure outcome variables within the 3 time periods were performed using means, medians, and proportions (%). Multivariable logistic regression analyses were conducted to assess the	The rates of TKA increased with age, with more than half of TKAs performed in patients > 70 years of age, for each of the 3 time periods analyzed. The overall rates of TKA increased from 40.4 per 10,000 persons to 54.7 per 10,000 persons between 1990 and 2000 for the > 70 years age group. The increased rate of TKA were similar among patients 60–64 and 65–69 years of age. The proportion of 50–59-year-old patients undergoing TKA showed a significant increase of 53.7% between periods I and III. The rate per 10,000 persons for this age group increased from 6.2 to 14.2 between 1990 and 2000. The disparity between races gradually decreased from period I to period

				relative change in each of the demographic and procedure outcome variables for period III, using period I as reference and controlling for period II and other potential confounders.	III. White patients comprised 93% of TKA recipients in period I which decreased to 87.5% in period III. Black patients accounted for 4.2% of TKAs in period I and increased to 6.5% in period III. Hispanic patients accounted for 1.8% of TKAs in period I and increased to 3.8% in period III. Hospitals performing < 40 and 40–99 TKAs per year represented 16.5% and 32.7% of the total cases in period I, which decreased to 10.4% and 22.7% in period III. Hospitals in higher-volume categories of 200–399 and > 400 TKAs per year had increases of 43.3% and 443.8% in the amount of TKA procedures performed. The proportion of TKAs performed in urban teaching

					hospitals increased from 28.5% in period I to 40.1% in period III. Mortality significantly decreased from period I to period III by 33.3%, and length of stay was reduced by half from period I to period III (8.6 ± 4.3 days vs. 4.3 ± 2.2 days). The rate of discharge to an inpatient facility after surgery increased from period I to period II (27.1% to 44.1%), and there was a further increase in this rate in period III (to 51.4%).

Johnson MA, Sloan M, Lopez VS, et al	Retrospective cohort study (3)	The purpose of this investigation was to assess if post-operative outcomes following total hip arthroplasty (THA) vary by racial groups.	A total of 117,389 patients undergoing THA for treatment of osteoarthritis (OA) were identified. 104,693 (89.18%) identified as Non-Hispanic White, 9,968 (8.49%) as Black, 905 (0.77%) as Hispanic and 1,823 (1.55%) as Asian.	The authors analyzed data from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) to identify patients who underwent THA for treatment of OA from 2008 to 2016. The primary outcome measures of this study included death or serious morbidity including surgical site infection, cardiac complication requiring intervention, respiratory complication requiring intervention, postoperative blood transfusion, sepsis, deep venous	12,604 (10.74%) experienced serious medical morbidity, with a total of 157 (0.13%) deaths within 30 days of surgery. Serious morbidities included surgical site infection (n = 11, 0.01%), respiratory dysfunction (n = 208, 0.18%), cardiac complications (n = 1,106, 0.94%), postoperative anemia requiring transfusion (n = 11,412, 9.72%), or sepsis diagnosis (n = 342, 0.29%). Blacks were more likely to experience death or a serious morbidity (n = 1,273, 13.12%, P < 0.001) as a result of their surgery when compared to non-Hispanic Whites (n = 10,961, 10.79%, P < 0.001). Non-Hispanic Whites (n = 75,532, 76.86%, P < 0.001) have

				thrombosis (DVT), or pulmonary embolus (PE) within 30 days of surgery. Univariate analysis was performed using Chi-square or Fischer's Exact test to compare categorical data and t-test to compare means for continuous data.	higher discharge rates to home when compared to the Black (n = 6,617, 70.07%, P < 0.001) and Hispanic (n = 625, 72.93%, P < 0.001) groups.
Jones A, Kwoh CK, Kelley ME, et al	Retrospective cohort study (3)	Is there a racial disparity in knee arthroplasty utilization within the Veteran's Health Administration patient population?	The study sample included all VA outpatients during the fiscal year 1999 who were 50 or more years of age and had a diagnosis of osteoarthritis (OA). The total number of patients with valid race data was 260,856 (85.7% of which were white). The number of patients with	The primary outcome of the study was TKA (total knee arthroplasty) within a 2-year follow-up period. The primary predictor variable was race, defined as African American verses non-Hispanic white. The proportion of Hispanic patients with osteoarthritis	In both cohorts, African American patients were significantly less likely than white patients to have received TKA within 2 years from initial visit (odds ratio [OR] 0.72, 95% confidence interval [CI] 0.65-0.80 in the overall OA cohort, and OR 0.72, 95% CO 0.63-0.81 in the subspecialty cohort).

			valid race data who were referred to rheumatology or orthopaedics specialty clinic was 46,207 (85.5% of which were white). The mean age for African American and white patients was 64.7 and 67.0 years old, respectively. Females consisted of 3% of the white and 2% of the African American patients.	in the sample was too small for meaning full comparison, therefore this group was excluded in the analysis. Data on comorbidities were collected as well.	

Jorgenson ES, Richardson DM, Thomasson AM, et al	Retrospective cohort study (3)	The purpose of this study is to examine racial variations in access to post-acute care (PAC) and rehabilitation (rehab) services following elective total knee arthroplasty (TKA), and determine if where patients are discharged after surgery for PAC/Rehab is associated with 30-day readmission rates	129,522 patients discharged from 169 hospitals in Pennsylvania between 2008 and 2012 were included in the study, 56,575 of which were <65 years old and 8,073 of which were Black.	The Pennsylvania Health Care Cost Containment Council database was used. The primary outcome was the type of PAC to which patients were discharged. Categories included were home with self-care, home with home services, skilled nursing facility (SNF), and inpatient rehab facility (IRF). Patient race was the primary exposure of interest. 30-day readmission rates were collected.	Patients under 65 years old had lower rates of discharge to inpatient rehab facilities (IRFs) and skilled nursing facilities (SNFs) versus to home-based rehab when compared with those older than 65. Compared to white patients, African-American patients had significantly higher odds of discharge to IRF and SNF ($p<.001$). Odds of 30-day readmission were significantly higher in patients discharged to IRFs or SNFs compared to those discharged to home care ($p<.0001$).

Kamath AF, Horneff JG, Gaffney V, et al	Retrospective cohort study (3)	The purpose of the study was to determine (1) the influence of race, gender, and body mass index (BMI) on primary TKA functional scores and ROM before gender-specific implants; and (2) whether comorbidities influence ROM and functional scores.	202 patients who underwent primary TKAs in 2004 were reviewed. 185 of the 202 patients were contacted, including 90 African Americans, 87 Caucasians, four Asians, and four Hispanics (55 men, 130 women). Their average age was 66 years, and average BMI was 34.4. Minimum follow-up was 24 months	Knee Society scores (KSS) and ROM, patient demographics, and the Charlson Comorbidity Index (CCI) were recorded on all patients. In addition to the standard 10-14 post op visit, all patients were seen routinely at 3, 6 ,12, and 24 months postoperatively.	Women had worse ROM at 2 years postoperatively, including lower average flexion and arc ROM (p=.001). African American women had a lower average KSS compared with African American men, other women, and other men (p=.004). African American female status was the only risk factor associated with lower (p = 0.002) functional knee scores at 2 years. African Americans experienced a difference in 2-year KSSs when compared with other races: African Americans had a lower average 2-year KSS compared with scores other races (p = 0.001).

Kim H, Meath THA, Tran FW, et al	Retrospective cohort study (3)	The purpose of this study was to examine changes in joint replacement care associated with Medicare's Comprehensive Care Joint Replacement (CJR) model among white, black and Hispanic patients.	A total of 747,098 joint replacement surgeries on 688,346 patients with Medicare from 2013 to 2017 were included. 442,163 (64.2%) of patients were female and 87,286 (12.7%) were 85 years or older. A total of 440,555 joint replacement surgeries were include in the pre-CRJ period which consisted of 92.9% white patients, 4.3% black patients and 2.7% Hispanic patients. Black and Hispanic patients were younger, more likely to have Medicaid coverage, and more likely to have more chronic medical comorbidities compared to	The authors analyzed the 100% Medicare inpatient, outpatient, skilled nursing facility, home health agency, and carrier claims to identify patients who underwent inpatient joint replacement surgeries from 2013 to 2017. Admissions and discharges between 2013 and 2015 were included within the pre-CRJ cohort and those between 2016 and 2017 were included within the post-CRJ cohort. Exclusion criteria included patients less than 66 years old, patients who were Medicare	Spending decreased by $439 for white patients under CRJ (95% Confidence Interval [CI] -$718 - -$161, P = 0.002), but did not change for black or Hispanic patients. Discharges to institutional post-acute care significantly decreased for white (-2.5 percentage points, 95% CI -4.7 - -0.4, P = 0.02, from a pre-CJR risk of 46.2%), black (-6.0 percentage points, 95% CI -9.8 - -2.2, P = 0.002, from a pre-CJR risk of 59.5%) and Hispanic (-4.3 percentage points, 95% CI -7.6 – 1.0, P = 0.01, from a pre-CJR risk of 54.3%) patients. 90-day all cause readmission risk decreased for black patients (-3.1 percentage points, 95% CI -5.9 - -0.4, P =

			white patients ($P < 0.001$ for all).	eligible due to a diagnosis of End Stage Renal Disease (ESRD), patient who did not identify as white, black or Hispanic and patients who had less than 12 months Medicare enrollment prior to or less than 3 months following their index hospitalization. A differences-in-differences framework was used to assess changes in outcomes associated with CRJ for white, black and Hispanic patients.	0.03, from a pre-CJR risk of 21.8%).

Klemt C, Walker P, Padmanabha A, et al	Retrospective cohort study (3)	The aim of this study is to evaluate the effect of ethnicity on clinical outcomes and complications following revision hip and knee TJA	4424 revision hip and knee TJA patients were evaluated. 183 were African American, 73 were Hispanic, and 51 were Asian.	Statistical analyses were used to identify significant differences in patient demographics and clinical outcomes between Caucasians and various ethnic minorities including African Americans, Hispanics, and Asians.	Compared to white patients, African American patients had a significantly higher BMI (p=.04), ASA score (p=.04), length of hospital stay (p=.06), and postoperative infection rates (p=.04). Hispanics demonstrated a significantly higher BMI (p=.04), when compared with white patients, alongside a significantly higher risk for postoperative infection (p< .01). African American patients had a significantly higher ASA score when compared with Hispanics (p=.02) and Asians (p=.03), and a significantly increased length of stay (p=.01) as well as a higher risk for postoperative infection (p=.02)

Kwoh CK, Vina ER, Cloonan YK, et al	Cross-sectional study (4)	The purpose of this study was to identify the determinants of knee osteoarthritis (OA) patients' preferences regarding total knee replacement (TKR) by race and to identify variables that may mediate racial differences in willingness to undergo TKR.	A total of 799 patients with knee OA who receive medical care from the University of Pittsburgh and the Veterans Affair (VA) Pittsburgh Healthcare System Clinics were included. 514 (64.3%) were white and 285 (35.7%) were African American (AA). The average age for white patients was 64.54 ± 9.39 and 58.68 ± 8.13 for black patients (P < 0.001). 302 (58.8%) of white patients were female while 207 (72.6%) of black patients were female. 84 (31.7%) of black patients reported having an income of < $10,000 compared to 32 (6.9%) for white patients	The authors performed a cross-sectional in-person interview of both AA and white patients with knee osteoarthritis who receive care from the University of Pittsburgh and the Veterans Affair (VA) Pittsburgh Healthcare System Clinics. Inclusion criteria included AA or white race, age greater than 50 years, presence of chronic frequent knee pain, moderate-to-severe knee OA based on Western Ontario McMaster Index (WOMAC) score, radiographic evidence of knee OA. Exclusion	AA patients were less willing to undergo TKR compared to white patients (80 % vs. 62 %). Better expectations regarding TKR surgery outcomes determined willingness to undergo surgery in both AA patients (Odds Ratio [OR] = 2.08, 95 % Confidence Interval [CI] 0.91-4.79, P < 0.001) and white patients (OR = 5.11, 95 % CI 2.31-11.30, P < 0.001). Among AA patients, having a better understanding of the procedure (OR = 1.80, 95 % CI 0.97-3.35, P < 0.001), perceiving a short hospital course (OR = 0.81, 95 % CI 0.58-1.13, P < 0.001), and believing in less post-surgical pain (OR = 0.73, 95 % CI 0.39-1.35, P < 0.001) and walking

			(P < 0.001). 81 (28.5%) black patients reported being disabled compared to 53 (10.4%) for white patients (P < 0.001).	criteria included a history of major joint replacement, terminal illness, inflammatory arthritis or dementia. Interviews sought to determine patients' familiarity with the TKR procedure and willingness to undergo the procedure.	difficulties (OR = 0.66, 95 % CI 0.37-1.16, P < 0.001) also determined willingness. Among white patients, having a surgical discussion with a physician (OR = 1.96, 95 % CI 1.05-3.68, P < 0.001), not ever receiving surgical referral (OR = 0.56, 95 % CI 0.32-0.99, P < 0.001), and higher trust in the healthcare system (OR = 1.58, 95 % CI 0.75-3.31, P < 0.001) determined willingness to undergo TKR.

Lan RH, Kamath AF	Retrospective cohort study (3)	The purpose of this investigation was to better understand the socioeconomic factors that influence hospitalization and post-discharge metrics after joint replacement to identify key areas of improvement in delivering orthopaedic care.	A total of 2869 consecutive patients who underwent total hip (THA) or knee arthroplasty (TKA) were included within the study. 1832 (63.9%) of patients were female, 1349 (47%) were white, 1391 (48.5%) were black, 49 (1.7%) were Asian and 80 (2.9%) were classified as other.	The authors analyzed an institutional administrative data set from an academic arthroplasty referral center to identify patients who underwent THA or TKA from 2007 to 2015. Univariate and stepwise forward logistic regression analyses were used to determine the relationship between the independent variables of gender, race, and insurance and the dependent variables of institutional care and prolonged LOS.	Females (odds ratio [OR] = 2.07, 95% confidence interval [CI] 1.74-2.46), minorities (OR = 2.11, 95% CI 1.78-2.51), and non-private insurance holders (OR = 1.56, 95% CI, 1.26-1.94) were more likely to be assigned to institutional care after discharge. Minorities (OR = 1.45, 95% CI 1.24-1.70) and non-private insurance holders (OR = 1.43, 95% CI 1.16-1.77) are more likely to exhibit longer length of stay. Mean charges were higher for males when compared to females ($80,010 vs $74,855, P < 0.001), as well as total costs ($19,910 vs $18,613; P < 0.001). Whites are more likely to hold private insurance than blacks (21.1% vs 11.3%, P < 0.001), as well as

					Medicare (32.5% vs 17.8%; P < 0.001) and managed care (26.8% vs 13.6%; P < 0.001). Blacks are more likely to hold Medicaid than whites (28.3% vs 10.5%) as well as managed Medicare (27.1% vs 6.6%; P < .001).

Lasater KB, McHugh MD	Retrospective cohort study (3)	To examine racial differences in readmissions of older adult TJA patients, to determine the relationship between nurse staffing and readmission, and to study whether the relationship between staffing and readmission differs for older black and white adults.	A total of 106,848 patients aged 65 and older undergoing elective TJA at 483 nonfederal acute care hospitals in California, Florida, New Jersey, and Pennsylvania were included in the study. A total of 22,664 direct care registered nurse survey respondents working at 483 hospitals were included.	Primary outcome was unplanned readmission within 30 days of discharge. Race was the independent variable of interest to examine the effect of race on readmission rates. Nurse staffing was the independent variable of interest to examine the effect of nurse workload on readmission rates.	After adjusting for patient and hospital level factors, older black patients had 40% greater likelihood of readmission compared to white patients ($p<.001$). Each additional patient per nurse was associated with 8% greater odds of readmission for older white patients ($p<.05$) and 15% greater odds for older black patients ($p<.001$).

Lavernia CJ, Alcerro JC, Rossi MD	Prospective observational study (2)	Objectives were to (1) determine and compare function and quality of life between blacks and whites at clinical presentation and at an average follow-up of 5 years after surgery; (2) determine if differences in fear and anxiety of pain exist between races before surgery; and (3) explore the relationship of anxiety and fear of pain before surgery with function and quality of life before and after surgery as a function of race	The mean age of the cohort was 65 years (standard deviation ± 14). Of the total number of patients, 220 (66.46%) were females. Two hundred eighty-two patients (85.2%) self-classified themselves as white and 49 (14.8%) as black. Blacks were younger ($p = 0.047$) than whites at presentation (61 ± 2 [SEM] years versus 66 ± 0.8 years, respectively). The minimum follow-up was 3 years (average, 5 years; range, 3–8 years; Table 1). The most common complication was deep infection (two) for blacks and superficial infection (four) for whites.	From October 2000 to March 2002, 331 patients with a diagnosis of end-stage osteoarthritis who were scheduled for either primary or revision hip or knee arthroplasty were assessed in a prospective controlled study. WOMAC, Quality of Well Being, SF-36, and Pain and Anxiety Symptoms Scale (PASS) were administered pre- and postoperatively (average 5-year follow-up).	For the SF-36 General Health Score, blacks reported having worse perceived general health than whites before surgery. Regardless of time, blacks scored worse than whites for all measures except for the SF-36 physical function and general health scores. Blacks had a greater fear score (i.e., that associated with the procedure) and total PASS score. For both races, there was a low association between the fear dimensions and dependent measures before and after surgery. Black patients undergoing hip and knee arthroplasty had lower scores than whites in most outcome measures regardless of time of assessment. Black patients undergoing hip

					and knee arthroplasty had lower scores than whites in most outcome measures regardless of time of assessment. They found higher fear levels before joint arthroplasty in blacks compared with whites. After surgery, blacks had much higher associations of the fear subscale, cognitive subscale, and total PASS score with the WOMAC physical function, pain, and total scores.

Lavernia CJ, Contreras JS, Parvizi J, et al	Prospective observational study (2)	Determine the answers to the following questions: Do gender and ethnicity influence outcome expectations? Is arthroplasty-related knowledge affected by gender and ethnicity? Do gender and ethnicity influence willingness to pay for surgery?	Two patients did not identify sex and 28% of patients did not identify ethnicity. Analysis was made on available data. Relative to participants in Miami, Philadelphia participants were more likely to be men (43% versus 32%) and to report hip problems (40% versus 29%). Participants at the Miami site were more likely to be of Hispanic (primarily Cuban or of Cuban descent) origin relative to Philadelphia participants (72% versus < 1%) and also were older (70 years versus 62 years).	In a prospective, multicenter study authors gave 765 patients an anonymous questionnaire on expectations, arthroplasty knowledge, and preferences before their consultation for hip and/or knee pain, from March 2005 to July 2007.	Six hundred seventy-two of the 765 patients (88%) completed questionnaires. Non-Hispanics and men were more likely to indicate they would be able to engage in more activities. Non-Hispanics and men had greater arthroplasty knowledge. Hispanics and women were more likely to report they would not pay for a total joint arthroplasty (TJA) relative to non-Hispanics and men. Sex and ethnic differences in patients presenting for their initial visit to the orthopedists for hip or knee pain influence expectations, knowledge, and preferences concerning TJAs.

Lavernia CJ, Lee D, Sierra RJ, et al	Retrospective cohort study (3)	To examine the association between race/ethnicity and insurance type and the preoperative status of patients undergoing joint arthroplasty surgery	A total of 739 primary total hip or knee arthroplasties performed on 573 patients (293 hip and 280 knee). The mean age of the cohort was 62.7 years (standard deviation [SD] = 14.1). Of the total number of patients, 361 (63.2%) were females, and 328 (57.3%) were of Hispanic origin. Within the Hispanic subgroup, 215 were Cuban/Cuban American, 82 were South or Central American, 13 were Puerto Rican, 5 were Mexican/Mexican American, and 13 were Spanish. In the present analysis, participants were classified as: Hispanic whites, 300 patients	From August 1992 to January 2000, a consecutive series of patients with a diagnosis of end-stage arthritis who underwent primary THA or TKA were retrospectively reviewed. Statistical analysis was performed on PROMs after surgery. A 2-way analysis of variance (ANOVA) with interaction was used to assess the joint influence of race/ethnicity and insurance.	Non-Hispanic whites had lower preoperative pain and WOMAC scores and higher Quality Well Being Index and SF-36 scores compared with other racial/ethnic subgroups. Patients with Medicare/private insurance had better preoperative scores relative to patients with Medicaid or no insurance. Racial/ethnic status was generally more strongly associated with preoperative status than was insurance type. Hispanics, blacks, and patients without Medicare or private health insurance reach arthroplasty surgery with lower preoperative functional and health status

			(52.4%); non-Hispanic whites, 157 (27.4%); Hispanic blacks 28 (4.9%); and non-Hispanic blacks, 88 (15.4%). Patients were also classified by type of insurance coverage, which was approximately evenly distributed across Medicare (38%), Medicaid/indigent (31%), and private insurance (31%)		

Lavernia CJ, Villa JM	Retrospective cohort study (3)	(1) Do black patients have more severe or more frequent preoperative pain, well-being, general health, and disease-specific scores when compared with white patients? (2) Are there differences between black patients and white patients after hip or knee arthroplasty on those same measures?	2010 total joint arthroplasties were performed in the year 2010 by one surgeon at a single institution. Of these, 105 patients self-reported as black. Those included in the final analysis included 39 black and 1219 white patients.	Controlling for confounders, including age and ethnicity, patients identifying as black and white were compared on the following preoperative and postoperative patient-oriented outcomes: pain intensity/frequency as measured by a visual analog scale (VAS), Quality of Well-Being (QWB-7), SF-36, and WOMAC scores. Postoperative analysis was only performed on patients with a minimum follow-up of 1 year.	Black patients had more severe preoperative pain intensity ($p<.001$) and worse well-being scores ($p=.037$). Post operatively, pain intensity and well-being scores were different but without clinical significance.

MacFarlane LA, Kim E, Cook NR, et al	Prospective cohort study (2)	The purpose of this investigation was to determine racial variation in total knee replacement (TKR) procedures in a diverse cohort with severe knee pain in an ongoing clinical trial.	A total of 1070 patients within the VITAL trial were identified as having frequent and chronic knee pain with high likelihood of having knee osteoarthritis (OA). The average age of the knee pain sub cohort was 66.9 ± 6.7 years. A total of 699 (65.3%) of patients were female. 786 (73.4%) of patients were white and 285 (26.6%) of patients were black. Black participants were significantly younger (63 vs. 68 years old) and more likely to be female (78% vs. 61%) compared with white participants. Fewer black participants reported education	The authors analyzed a sub cohort of patients enrolled in the Vitamin D and OmegA-3 Trial (VITAL) with frequent and chronic knee pain with high likelihood of having knee OA using a validated survey. Inclusion criteria included men over the age of 50 years and women over the age of 55 years old. Exclusion criteria included patients with previous bilateral TKRs and those who did not identify as either white or black. Baseline characteristics were compared with statistical significance assessed with	Black participants reported worse baseline Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain (44.8 ± 20.5 vs. 32.4 ± 16.0, P < 0.001) and function scores (44.9 ± 20.9 vs. 32.2 ± 17.8, P < 0.001). During the median follow-up of 3.6 years, TKRs were reported by 180 (16.8%) participants within the knee pain sub cohort. Black participants were less likely to undergo TKR (30 [10.5%] vs. 150 [19.1%], P < 0.001) compared to white participants. The cumulative incidence of TKR was statistically lower in black participants than in white participants (P = 0.002). After adjusting for all baseline covariates, black patients were

			beyond high school (68% vs. 88%) or had income greater than $50,000 per year (28% vs. 55%). Black participants were also more likely to be obese (BMI >30 kg/m2, 68% vs. 50%) and to have diabetes (29% vs. 18%) or hypertension (83% vs. 65%).	t test for continuous variables and Chi squared or Fischer exact test for binary variables. Log-rank test was used to assess for differences in cumulative incidence of TKR between black and white participants. Cox proportional hazards regression models were used to calculate hazard ratios (HR) for TKR over time associated with black versus white race.	nearly half a likely to undergo TKR compared to white participants (HR 0.51, 95% Confidence Interval [CI] 0.32–0.81).

Mehta B, Ho K, Bido J, et al	Retrospective cohort study (3)	The purpose of this study was to examine bilateral total knee arthroplasty (BTKA) versus unilateral total knee arthroplasty (UTKA) utilization and in-hospital complications comparing African American patients to White patients.	An estimated 276,194 BTKA and 5,528,429 UTKA were performed in the US in patients over 50 years old.	The database of the Healthcare Cost and Utilization Project (National Inpatient Sample, 2007-2016) was used to identify patients ≥ 50 years old who underwent elective primary TKA. Differences in temporal trends in utilization and major in-hospital complication rates of BTKA vs UTKA comparing African American patients to white patients were computed. Major in hospital complications studied included postoperative myocardial infarction, prosthetic	The proportion of BTKA among all TKAs declined. African Americans were less likely to undergo BTKA compared to white patients throughout the study period (trend p=.01). In-hospital complication rates for UTKA were higher in African American patients compared to whites throughout the study period (trend P < .0001). However, the in-hospital complication rates varied between Whites and AAs throughout the study period for BTKA (trend P =.09).

				device complication, surgical wound infection, and venous thromboembolism.	
Menendez ME, Ring D, Barnes CL	Retrospective cohort study (3)	This study aimed to investigate whether inpatient dislocation after THA could be associated with patient and hospital characteristics.	All adult patients undergoing elective primary THA were considered, and the population was further narrowed by identifying those who sustained a hip dislocation during index	Discharge records from the Nationwide Inpatient Sample (2002-2011) were used for the data source. Temporal trends were assessed, and multivariable logistic regression	The in-hospital dislocation rate increased 2002 to 2011, despite a downward trend in length of stay ($p < .001$). Patient characteristics associated with the occurrence of dislocation were black ($p<.001$) or Hispanic ($p=.001$) race/ethnicity, lower household income ($p < .001$),

			hospitalization. The final number was 2,173.	modeling was used to identify factors associated with dislocation.	and Medicaid insurance (p=.034). Comorbidities associated with dislocation included hemiparesis/hemiplegia (p< .001), drug use disorder (p=.02), chronic renal failure (p< .001), psychosis (p=.027), and obesity (p< .001). Age, sex, and alcohol use disorder did not affect the dislocation risk. Dislocations were less likely to occur at teaching hospitals (p< .001) and in the South (p=.002).

Okike K, Chan PH, Prentice HA, et al	Retrospective cohort study (3)	The purpose of this study was to assess whether racial or ethnic disparities in total hip arthroplasty (THA) outcomes persist in a universally insured population of patients enrolled in an integrated health-care system.	A total of 72,755 patients who received a total hip arthroplasty were included within the study. 79.1% were white, 8.2% were black, 8.5% were Hispanic and 4.2% were Asian. The average age was 65.8 years old and 42.3% of patients were male.	The authors analyzed the Kaiser Permanente Total Joint Replacement Registry (TJRR) to identify patients age greater than 18 who underwent elective THA from 2001 to 2016. Cases were excluded if they involved revision procedures, a prior surgical procedure of the affected hip, prior infection involving the affected joint, same-day bilateral procedures, or staged bilateral procedures within 90 days of each other. Cases involving the DePuy ASR system were also excluded due to increased	Lifetime all-cause revision rate was lower for all minority groups when compared to white patients, including black (Hazard Ratio [HR] = 0.79, 95% Confidence Interval [CI] 0.66-0.94, P = 0.007), Hispanic (HR = 0.73; 95% CI 0.61-0.87, P < 0.001), and Asian (HR = 0.49, 95% CI 0.37-0.66, P < 0.001). With regard to postoperative events, there was no observed difference in mortality when comparing the 3 minority groups with the white group. When compared to the white group, black and Hispanic patients had a lower likelihood of 90-day deep infection (Odds Ratio [OR] = 0.62, 95% CI 0.40-0.96, P = 0.031 and OR = 0.58, 95% CI 0.36-0.94, P =

				risks of revision associated within this implant. Racial and ethnic differences in lifetime revision (all-cause, aseptic, and septic) and 90-day postoperative outcomes including infection, venous thromboembolism, emergency department (ED) visits, readmission and mortality were analyzed using multiple regression models.	0.027), Asian patients had a lower likelihood of 90-day venous thromboembolism (OR = 0.29, 95% CI 0.14-0.58, P < 0.001), and Hispanic and Asian patients had a lower likelihood of 90-day readmission (OR = 0.79, 95% CI 0.68-0.92, P = 0.002 and OR = 0.73, 95% CI 0.59-0.91, P = 0.005). 90-day ED visits were higher among black patients (OR = 1.15, 95% CI 1.05-1.25, P = 0.002) and Hispanic patients (OR = 1.18, 95% CI 1.08-1.28, P < 0.001).

Oronce CI, Shao H, Shi L	Retrospective cohort study (3)	The purpose of this investigation was to identify disparities in elective total hip arthroplasty (THA) readmissions based on race, socioeconomic status and type of insurance.	A total of 58,777 patients who were discharged from a California Hospital after undergoing elective THA were included. 85.24% were white, 4.83% were black, 7.47% were Hispanic and 2.55% were Asian. The median age for black and Hispanic patients was 62 and 63 compared to 67 years old for white and Asian patients. 41% of African Americans, 26% of Hispanics and 14% of whites were within the lowest quartile for socioeconomic status (P < 0.001). 10% of blacks and 9% of Hispanics were enrolled in Medicaid (P < 0.001) and	The authors analyzed data from The Healthcare Cost and Utilization Project's State Inpatient Database from California to identify index hospitalization for elective primary THA and rehospitalization within 30 days of discharge. Multivariate logistic regression was used to examine differences in all-cause readmission within 30 days by race, socioeconomic status and insurance.	The overall rate of unplanned 30-day all-cause readmissions after elective primary THA was 4.6%. African American (Odds Ratio [OR] = 1.38, 95% Confidence Interval [CI] 1.16–1.64) and Hispanic (OR = 1.16, 95% CI 1.00–1.34) patients had a higher risk of readmission than white patients after THA when accounting for comorbidities and hospital factors. Lower socioeconomic status was associated with higher odds of readmission within 30 days (OR = 1.24, 95% CI 1.10–1.39). Compared with private insurance, Medicare (OR = 1.26 95% CI 1.13–1.43), Medicaid (OR = 1.86 95% CI 1.49–2.32), and uninsured status (OR = 1.31, 95% CI 1.01–1.69)

			5% were uninsured (P < 0.001)		were also associated with increased readmission risk.
Owens JM, Bedard NA, Dowdle SB, et al	Retrospective cohort study (3)	This study evaluated the impact of race on VTE following TKA using a large multicenter database.	In total, 96,230 patients were included in the study. Patients were stratified based on race: Asian, Black/African American, White, and Other.	Primary outcomes included overall complications and VTE. Data was obtained from the American College of Surgeons National Surgical Quality Improvement Program to identify patients who underwent primary TKA in 2010-2014. Demographics were	Black patients had a significantly higher rate of any complication (5.5%, p=.007), deep venous thrombosis (1.3%, p<.001), and pulmonary embolism (1.1%, p<.001) than other races. Overall mortality rate did not differ between races (p=.26). Black patients were significantly more likely to have a VTE than White patients (OR 1.7, 95% CI 1.4-2.0).

				compared to determine the impact on 30-day postoperative complications.	Overall complications were significantly higher for Black patients than White patients (OR 1.1, 95% CI 1.02-1.3). There were no differences in the rates of VTE or overall complications between Asians/Other races and Whites.
Perez BA, Slover J, Edusei E, et al	Prospective cohort study (2)	The aim of this study is to assess the role of demographics and expectations on differences in perioperative patient reported outcomes (PRO) following TKA.	Total number of primary unilateral TKA patients included in this two-institution study is 133. There were 69 (51.9%) black patients, 55 (41.4%) white patients, 3 (2.3%) Hispanics, 2 (1.5%) Asian patients, and 4 (3%) patients of unknown race. 104 were women.	Validated PRO questionnaires were collected at three time points (preoperatively, 4-8 weeks post op, 9-14 months post op) in the TKA process. Questionnaires included the Knee Injury and Osteoarthritis Outcome Scores (KOOS) for symptoms, pain, and activities of daily living. Statistical analysis was conducted to	Females were associated with worse preoperative KOOS scores for symptoms, pain, and activities of daily living ($p<.05$). African Americans were associated with worse KOOS for pain, activities of daily living, and quality of life ($p<.05$). There was no statistically significant difference seen in post-operative scores.

				determine the impact of gender, ethnic background and expectation surveys responses to assess PRO at these time points.	
Riddle DL, Slover J, Keefe FJ	Randomized controlled trial (2)	To determine whether race associated with total knee arthroplasty (TKA) outcome after accounting for potential confounding factors	For the sample of 384 participants, n=135 self-reported as African American or Black and 240 self-reported as White. The remainder (N = 9) were distributed among the other race/ethnicity categories. African Americans were older, had a higher BMI, lower educational level and	Authors conducted a secondary analysis of a randomized clinical trial of 384 participants with moderate to high pain catastrophizing who underwent knee arthroplasty. Preoperative measures included race/ethnicity status as well as a variety of potential confounders including	WOMAC Pain scores differences for African Americans versus non-African Americans averaged approximately 2 points in unadjusted analyses and 1 to 1.5 points in adjusted analyses. In adjusted analyses, follow-up WOMAC Function scores differed by 6 points for African Americans compared to non-African Americans (p = 0.002).

			income as compared to the non-African Americans.	socioeconomic status, comorbidity and bodily pain. Outcome measures were Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Pain and Function Scales as well as performance measures. Linear mixed effects models compared outcomes over a one-year follow-up for African Americans versus the non-African Americans.	

Roche M, Law TY, Sultan AA, et al	Retrospective cohort study (3)	The purpose of this study was to evaluate the incidence, annual burden, causes and age group distribution of revision total knee arthroplasty (TKA) among different racial groups.	A total of 125,901 patients with knee osteoarthritis (OA) who underwent primary total knee arthroplasty (TKA) from 2007 to 2014 were identified. Of these patients, 11,589 (9.2%) underwent revision TKA. The Caucasian cohort was the largest with 98,257 patients who underwent primary TKA (78%) (P < 0.001). The Native American TKA cohort contributed the smallest number of primary procedures with 261 patients (0.21%) (P < 0.001).	The authors analyzed data from the PearlDriver database to identify patients with OA who underwent primary then subsequent revision TKA from 2007 to 2014. Patients were stratified by race and age. In each racial cohort, the overall incidence of revision TKA, annual revision burdens, and causes of revisions were calculated and compared. Additionally, a sub-analysis for the incidence of revision TKA stratified by age, in each cohort, was performed. Statistical analysis was performed with one-way analysis of variance	Revision incidence and burden was the highest in the African American cohort (12.4%, 11.1%) and was lowest within the Asian cohort (3.4%, 3.3%) (P < 0.001). Revision incidence and burden were 8.1 and 7.5% in the Hispanic cohort and 9.6 and 8.7% in the Native American cohort. Across all cohorts, mechanical complications of the joint prosthesis were the most common cause of revision followed by periprosthetic joint infection, while contracture was the least common (P < 0.001). Analysis by age of each cohort found that the highest incidence of revision TKA was in patients less than 40 years old in the Caucasians cohort (27.1%). Among

				(ANOVA) and chi-squared analysis to demonstrate revision incidence, burden, causes, and age distribution.	the Asian (4.1%) and Native American (9.7%) cohorts, revision incidence was highest in patients older than 65 years. Matched African Americans and Asians had slightly lower mean revision incidence (12.40 vs. 12.65% and 15.07 vs. 16.82%, p = 0.005 and 0.025), while matched Native American had significantly higher mean revision incidence (35.76 vs. 27.46%, p = 0.064) when compared to the Caucasian cohort.

Rubenstein WJ, Harris AHS, Hwang KM, et al	Prospective cohort study (2)	The aim of the study was to determine whether social determinants of health (SDOH) affect patient-reported outcome measures (PROMs) following TJA in Veterans Health Administration (VHA) patients.	1,088 patients completed baseline surveys and 858 patients completed follow-up surveys at 1 year. This final cohort included 587 TKA patients and 271 THA patients. 79.7% of TKA patients and 83% of THA patients were white. The mean age was 66.1 years for TKA patients and 65.6 years for THA patients. 93.2% of TKA patients and 94.7% of THA patients were men.	Patients undergoing TJA at three VHA hospitals prospectively completed PROMs before and 1 year after surgery. PROMs included the Hip disability and Osteoarthritis Outcome Score, the Knee injury and Osteoarthritis Outcome Score, and their Joint Replacement sub scores. SDOH included race, ethnicity, marital status, education, and employment status. The level of poverty in each patient's neighborhood was determined. Medical comorbidities were recorded.	Black race was significantly negatively correlated with knee PROM improvement ($p<.05$) and Hispanic ethnicity was significantly negatively correlated with hip PROM improvement ($p<.05$) compared to whites. Higher baseline PROM scores and lower age were significantly associated with lower PROM improvement. Significant associations were also found based on education, gender, comorbidities, and neighborhood poverty.

				Analyses were performed to determine whether SDOH were significantly associated with PROM improvement after surgery.	

Rudasill SE, Dattilo JR, Liu J, et al	Retrospective cohort study (3)	The purpose of this study was to explore racial biases in the surgical decision making between total hip arthroplasty (THA) and hemiarthroplasty for displaced femoral neck fractures as well as racial disparities in postoperative complications, readmission rates and 30-day mortality.	A total of 11,408 patients were identified with a diagnosis of femoral neck fracture and were treated with either a THA or hemiarthroplasty. 88.28% of patients were white, 4.74% were Hispanic, 4.05% were African American and 2.93% were Asian.	The authors analyzed the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) to identify patients using the postoperative diagnosis of transcervical femoral neck fracture from 2006 to 2014. Multivariable regression analysis was conducted including race and independent risk factors including demographics and medial comorbidities to elucidate the treatment decision for THA versus hemiarthroplasty. Postoperative outcomes included complications of infection,	No difference was observed in the likelihood of receiving a THA versus hemiarthroplasty among different racial groups. Age was determined to be a negative predictor of receiving a THA (Odds Ratio [OR] = 0.730, 95% CI 0.625-0.854, P < 0.001). Patients who reported steroid use for chronic conditions were more likely to undergo THA compared to hemiarthroplasty (OR = 1.937, 95% CI 1.056-3.552, P = 0.033). Race was significantly associated with having a major postoperative complication (P = 0.013) and 30-day mortality (P = 0.014) for patients identifying as Asian. Neither infection (P = 0.209) nor cardiopulmonary

				dislocation, cardiopulmonary compromise, readmission rate and 30-day mortality.	compromise (P = 0.863) or readmission rates (P = 0.588) were associated with race.

Singh JA, Kallan MJ, Chen Y, et al	Retrospective cohort study (3)	The purpose of this study is to assess the association of race/ethnicity with discharge disposition and hospital readmission after elective primary TKA, and to assess the association of nonhome discharge disposition with hospital readmission risk	Among 107 768 patients, 7287 (6.8%) were African American, 68 372 (63.4%) were women, 46 420 (43.1%) were younger than 65 years, and 60 636 (56.3%) were insured by Medicare.	Primary outcome was discharge disposition and 90-day hospital readmission. Data was obtained from the Pennsylvania Health Care Cost Containment Council Database which includes all discharges of patients who underwent elective primary TKA in 170 nongovernmental acute care hospitals in Pennsylvania from April 1, 2012, to September 30, 2015.	In patients younger than 65 years, African American patients were more likely than white patients to be discharged to inpatient rehabilitation facility (IRF) (adjusted relative risk ratio [aRRR], 2.49 [95% CI, 1.42-4.36]; p=.001) or a skilled nursing facility (SNF) (aRRR, 3.91 [95% CI, 2.17-7.06]; p<.001) and had higher odds of 90-day hospital readmission (adjusted odds ratio [aOR], 1.30 [95% CI, 1.02-1.67]; p=.04). Compared with white patients 65 years or older, African American patients 65 years or older were more likely to be discharged to SNF (aRRR, 3.30 [95% CI, 1.81-6.02]; p<.001). In both age groups, discharge to an IRF F (age <65

					years: aOR, 3.62 [95% CI, 2.33-5.64]; p< .001; age 65 years: aOR, 2.85 [95% CI, 2.25-3.61]; P < .001) or SNF (age <65 years: aOR, 1.91 [95% CI, 1.37-2.65]; p< .001; age 65 years: aOR, 1.55 [95% CI, 1.27-1.89]; p< .001) was associated with higher odds of 90-day readmission.
Singh JA, Lu X, Rosenthal GE, et al	Retrospective cohort study (3)	The purpose of this study was to determine whether racial disparities in usage and outcomes of total knee and total hip arthroplasty (TKA and THA) have declined over time.	A total of 2,684,575 primary TKAs, 267,644 revision TKAs, 1,328,902 primary THAs and 317,408 revision THAs performed between 1991 and 2008 were included. Compared with Caucasian patients, African American patients included in the study were more likely to be younger, women and have	The authors analyzed data from the United States (US) Medicare Provided Analysis and Review (MedPAR) Part A data files to identify fee-for-service beneficiaries who underwent primary or revision TKA or THA between 1991 to 2008. For the primary TKA and THA cohorts,	The use of primary TKA was 36% lower for African Americans compared with Caucasians in 1991 (P < 0.0001) and 40% lower in 2008 (P < 0.0001) with similar findings for the other cohorts of revision TKA, primary THA and revision THA. The disparity between African Americans and Caucasians in 30-day hospital readmission rates and proportion of patients discharged to

			significantly more medical comorbidities.	patients who had infection, bone or metastatic cancer or fracture at the time of surgery were excluded. Trends in hospital length of stay, 30-day mortality, hospital readmission within 30 days of discharge, occurrence of the discharge to home after hospitalization were evaluated using Cochran-Mantel-Haenszel statistics. Trends in 30-day mortality were evaluated using logistic regression models.	home after surgery increased significantly from 1991 to 2008 across all cohorts ($P < 0.05$).

Skinner J, Weinstein JN, Sporer SM, et al	Retrospective cohort study (3)	The purpose of this study was to determine if and where racial and ethnic disparities occur among Medicare enrollees in the use of knee arthroplasty.	A total of 430,726 TKAs were performed in 403,251 patients were reported. Three racial or ethnic groups were defined: black, Hispanic, and non-Hispanic white (or "white").	Data was obtained through the Medicare fee-for-service claims database for 1998 through 2000 to determine the incidence of knee arthroplasty according to Hospital Referral Region, sex, and race or ethnic group.	The rate of knee arthroplasty was higher for white women (5.97 procedures per 1000) than for Hispanic women (5.37 per 1000) and black women (4.84 per 1000) ($p<.001$). The rate for white men (4.82 procedures per 1000) was higher than that for Hispanic men (3.46 per 1000) and more than double that for black men (1.84 per 1000) ($p<.001$). The rates were significantly lower for black men than for non-Hispanic white men in nearly every region of the country ($p<.05$). Among black women, living in a region with a low level of residential segregation was associated with a smaller difference in arthroplasty rates (0.46 per 1000) than living in a region with a high level of

					segregation (1.05 per 1000, p<0.001).
Skinner J, Zhou W, Weinstein J	Retrospective cohort study (3)	The purpose of this study is to investigate the associations between income, total knee arthroplasty (TKA), and underlying rates of knee osteoarthritis.	A total of 27.5 million patients were analyzed from the US Medicare claims database, and a total of 1926 were analyzed from the NHANES III.	The 2000 US Medicare claims database was used to measure incidence of total knee arthroplasty by race, ethnicity, postal code income, and region. The National Health and Nutrition Examination Survey (NHANES III) for persons sixty years or older with radiographic	Age-adjusted rates of TKA in the high-income quintile were no higher than those in the low-income group. Access to care was better for high-income groups (18.5% higher than the lowest quintile). Racial disparities in arthroplasty were significant, with black patients receiving less TKAs than their white counterparts (p<.001). There was no evidence of an income gradient for clinical and

				and clinical evidence of osteoarthritis was also used.	radiographic measurements of arthritis, other than a significant negative association between income and pain on passive motion (p<.05).
Slover JD, Walsh MG, Zuckerman JD	Prospective observational study (2)	Is there a relationship between sex, race, and preoperative function in patients undergoing hip and knee arthroplasty?	The study was conducted on 3542 consecutive primary unilateral total hip and knee arthroplasty patients, 1596 which were hips. Average age of hip patient's was 65.2 years old, and average age of knee patients was 59.8 years old.	Data was collected from January 1997 to July 2006. Self-reported basic demographic data included age, sex, and race (categorized as black, white, Latino, and other). Harris Hip and Knee Society Scores were used to quantify preoperative function.	Compared to white patients, Harris Hip Scores were 4.9 (p<.0001) and 8.77 (p<.001) average points lower in African American and Hispanic patient populations, respectively. Compared to white patients, Knee Society Scores were 6.03 (p<.05) and 12.8 (p<.001) average points lower in African American and Hispanic patient populations, respectively. Compared with Hispanic men,

					African American men had statistically significantly better preoperative Knee Society Scores (18.92 points better (p<.009).
SooHoo NF, Farng E, Zingmond DS	Retrospective cohort study (3)	The purpose of this investigation was to identify the characteristics of patients who undergo total hip replacement (THR) at high-volume hospitals and their differences from those who receive care at low-volume hospitals.	A total of 138,399 patients who underwent THR surgery in one of 399 California hospitals between 1995 and 2005. There were 53,215 procedures (38%) performed at hospitals with low (6221) or intermediate (46,994) surgical volumes. 85,184 (62%) procedures occurred at higher-volume hospitals. The average age of all patients was 66.16 ± 12.92. 79,514 (57%) of patients	The authors analyzed the California Office of Statewide Health Planning and Development (OSHPD) database to identify patients who underwent THR surgery between 1995 and 2005. Inclusion criteria included patients who underwent primary THR in a California hospital. Exclusion criteria included patients with infection, pathologic fracture or	There were 160 (40%) low-volume and 160 (40%) intermediate-volume hospitals included within the study. The remaining 20% of the hospitals made up the group of 79 high-volume centers. The average surgical volume was 3.5 cases per year per hospital at low-volume hospitals. The average was 26.7 cases per year per hospital at intermediate-volume centers, and 98.0 cases per year per high-volume hospital. High volume hospitals had a higher percentage of Caucasian

			were female. 117,107 (85%) were white, 6,051 (4%) were black, 9,368 (7%) were Hispanic and 3006 (2%) were Asian.	undergoing revision arthroplasty. Logistic regression models were created to examine the association among patient characteristics including race/ethnicity, income, age, and the Charlson comorbidity index of patients and the likelihood of undergoing surgery at low-, intermediate-, and high-volume hospitals.	patients (87%) than intermediate (83%) or low-volume hospitals (68%). Conversely, the proportion of patients in the lowest quartile of income was greater at low volume (9%) and intermediate-volume (5%) hospitals than at high-volume centers (3%). Hispanic patients had the highest Relative Risk Ratio (RRR) for being treated at either a low-volume (RRR = 3.52, 95% Confidence Interval [CI] 2.61-4.74, P < 0.001) or intermediate volume hospital (RRR = 1.60, 95% CI 1.24-2.06, P < 0.001) when compared to Caucasian patients. Black (RRR = 1.78, 95% CI, 1.08-2.92; p = 0.023) and Asian (RRR = 1.77, 95% CI, 1.00-3.22, P =

					0.048) patients also had a high risk of being treated in a low volume hospital compared to Caucasian patients. Patients within the lowest income group were at increased risk of being treated at either a low-volume (RRR = 3.19, 95% CI 1.89-5.37, P < 0.001) or intermediate volume (RRR = 1.80, 95% CI 1.09-2.98, P = 0.02) hospital compared to patients within the highest income group.

SooHoo NF, Zingmond DS, Ko CY	Retrospective cohort study (3)	The purpose of this study is to identify the characteristics of patients who undergo total knee arthroplasty (TKA) at high-volume hospitals and their differences from those who receive care at low-volume hospitals.	222,684 patients' data was analyzed from the study period. Primary TKA was performed at 413 hospitals. There were 165 low-volume and 165 intermediate-volume hospitals, comprising of 40% of the total.	Patients who underwent TKA in California from 1991-2001 had their discharge data analyzed. Hospitals were classified into tiers of surgical volume (low [bottom 40th percentile], intermediate [middle 40th percentile], high [top 20th percentile]). Separate logistics regression models were created to examine the relationships between race/ethnicity, insurance status, and the utilization of high-volume and low-volume hospitals. Logistic regression models corrected for covariates including age,	Patients who were not belonging to the Caucasian race/ethnicity had a higher relative risk ratio for being treated at a low-volume center, including Black (p=.02), Hispanic (p<.001), and Asian/Pacific Islander (p<.001) ethnic groups. Medicaid insurance was an independent predictor of treatment at low-volume hospitals.

				gender, and comorbidity.	
Steel N, Clark A, Lang IA, et al	Prospective observational study (2)	Can racial disparities in receipt of hip and knee joint replacements be explained by disparities in need?	Patient population included those in the Health and Retirement Study (HRS) which is a survey every 2 years (1998, 2000, 2002) and includes 14,807 adults aged 60 or older over a 6-year period.	Data from the HRS database were used to assess need, which was based on having: difficulty walking, joint pain, stiffness, swelling, receipt of treatment for arthritis. The outcome was measured as receipt of a joint replacement	Need in 2002 was greater in participants who were older than 74 years, women, not college educated, in the poorest 3rd, or obese. 168 patients in need received a joint replacement, with lower receipt in African Americans (vs white [p=.005]), less educated (vs college educated [p=.029]).

				over the subsequent 2 years from survey.	
Stone AH, MacDonald JH, Joshi MS, et al	Retrospective cohort study (3)	This study examines the influence of race on length of stay (LOS), discharge disposition, and complications requiring reoperation following total joint arthroplasty (TJA).	A consecutive series of 7208 primary TJA procedures performed at a single institution between 2013 and 2017 were analyzed. Of these, 6182 (84.3%) were white and 1026 (14.0%) were African Americans (AA). AA patients were younger (63.62 vs 66.84 years, P < .001), and more likely female (68.8% vs 57.0%, P < .001).	A single institution's primary TJA patient series was reviewed for case performed between July 2013 and June 2017. Chi-squared and t-tests were used to quantify differences between the groups and multiple logistic regression was used to identify race as an independent risk factor.	African American patients had a longer length of stay (2.19 vs 2.00 days, p< .001), more likely to experience septic complications (1.3% vs 0.5%, p=.002) and manipulation under anesthesia (3.9% vs 1.8%, p< .001), and less likely to discharge home (67.1% vs 81.1%, p< .001). Compared to white patients, AA patients were more likely to discharge to a facility (adjusted OR 2.63, 95% CI 2.19-3.16, p< .001) and undergo a manipulation under anesthesia (adjusted OR 1.90, 95% CI

					1.26-2.85, p=.002).
Suarez-Almazor ME, Souchek J, Kelly A, et al	Cross-sectional study (4)	The purpose of this investigation was to evaluate the preferences and beliefs of patients with knee osteoarthritis (OA) from diverse ethnic backgrounds in relation to total knee replacement (TKR) surgery.	A total of 198 patients with a primary diagnosis of knee OA who met inclusion and exclusion criteria were included within the study. A total of 66 patients were included in the white, African American (AA) and Hispanic groups. Ethnic minorities were younger, were less educated, and had lower	The authors performed a cross-sectional survey of patients with knee OA attending a single multiclinic institution in Houston, TX. An administrative database was used to identify patients with a physician diagnosis of OA and asked to participate in an in-person	TKR surgery was recommended to 27% of the African Americans, compared with 15% of whites and 11% of Hispanics (P=.04). This was not statistically significant after adjusting for demographics and WOMAC score. More whites than minorities (AA and Hispanics combined) had considered TKR (42% vs 28%, P = 0.04). 97% of white patients stated they would

			income than whites (P < 0.05 for each).	interview. Inclusion criteria included a physician diagnosis of knee OA, patient ethnicity of white, African American (AA), or Hispanic, age greater than 55 years, no history of previous TKR surgery, English or Spanish proficiency and adequate cognitive ability. The survey sought to assess patients' familiarity with joint replacement surgery for OA, outcome expectations and trust in physicians. The Western Ontario and McMaster Universities (WOMAC) Index was used to assess	consider TKR if their arthritis became worse, and their physician recommended the procedure compared to 85% for AA and 76% of Hispanic patients (P = 0.002). 100% of white patients had heard of TKR surgery compared to 91% of AA and 80% of Hispanic patients (P < 0.001). 88% of white patients had a relative or close friend who had undergone a TKR compared to 70% of AA and 58% of Hispanic patients (P = 0.001). When patients were asked whether they would consider TKR if recommended by their physicians, the only variables that remained statistically significant were ethnicity and perception of efficacy. The odds of a white person

				severity of OA.	considering TKR if recommended by their physician were 3 times that of an African American and 6 times that of a Hispanic.

Vina ER, Cloonan YK, Ibrahim SA, et al	Cross-sectional study (4)	To determine whether there are racial differences in social support among patients with knee osteoarthritis (OA) and whether the impact of social support on patient preferences for total knee replacement (TKR) varies by race and sex.	A total of 514 white and 285 AA patients participated in the study. AA patients, compared to white patients, were younger ($p<0.001$) and more likely to be female ($p<0.001$). They were also less likely to have a graduate degree, less likely to be employed and more likely to have lower income ($P < 0.001$)	A total of 514 white and 285 African American patients with knee OA were surveyed. Logistic regression models were performed to determine if the relationship between willingness to undergo TKR and the interaction of patient race and sex was mediated by social support	Compared to whites with knee OA, African American patients were less likely to be married ($P < 0.001$), reported fewer close friends/relatives ($P < 0.001$), and had lower Medical Outcomes Study Social Support Scale (MOS-SSS) scores ($P < 0.001$). African American patients were also less willing to undergo TKR (62% versus 80%; $P < 0.001$) than whites. The odds of willingness to undergo TKR were less in white females compared to white males when adjusted for recruitment site, age, income, and the Western Ontario and McMaster Universities Osteoarthritis Index score (odds ratio [OR] 0.57, 95% confidence interval [95% CI] 0.34-0.96). This

					difference was no longer significant when further adjusted for marital status, number of close friends/relatives, and MOS-SSS score, but the effect size remained unchanged (OR 0.60, 95% CI 0.35-1.02). The odds of willingness to undergo TKR remained much less in African American females (OR 0.35, 95% CI 0.19-0.64) and African American males (OR 0.28, 95% CI 0.14-0.54) compared to white males when controlled for sociodemographic, clinical, and social support measures. Social support is an important determinant of preference for TKR surgery only among whites.

Vina ER, Kallan MJ, Collier A, et al	Retrospective cohort study (3)	To examine racial differences where THR recipients receive postsurgical rehabilitation care and determine whether discharge destination is associated with hospital readmission.	Among the THR surgery patients analyzed, 63 625 self-identified as white and 4391 self-identified as AA. Among those <65 years, AAs were less likely to have private insurance and more likely to rely on Medicare or Medicaid than whites (P < .001). After age 65, a vast majority (nearly 90%) of both AAs and whites relied on Medicare. AAs were more likely than whites to be admitted into hospitals with ≥200 THR surgeries per year. This was the case for those <65 years (P < .001) as well as among those ≥65 years (P = .019).	Using the Pennsylvania Health Care Cost Containment Council database, authors selected African American (AA) or white adults who underwent THR surgery (n = 68,016). They used multinomial logistic regression models to assess the relationship between race and postsurgical discharge destination. They calculated 90-day hospital readmission as function of discharge destination.	Among patients <65 years, compared to whites, AAs had a higher risk of discharge to an IRF (adjusted relative risk ratio [aRRR]: 2.56, 95% confidence interval [CI]: 1.77-3.71) and a SNF (aRRR 3.37, 95% CI: 2.07-5.49). Among those ≥65 years, AA patients also had a higher risk of discharge to an IRF (aRRR: 1.96, 95% CI: 1.39-2.76) and a SNF (aRRR: 3.66, 95% CI: 2.29-5.84). Discharge to either IRF or SNF, instead of home with self-care, was significantly associated with higher odds of 90-day hospital readmission (<65 years: adjusted odds ratio [aOR]: 4.06, 95% CI: 3.49-4.74; aOR: 2.05, 95% CI: 1.70-2.46, respectively; ≥65 years: aOR: 4.32, 95% CI: 3.67-

			Complication rates from the procedure were minimal among all patients. Comorbidities such as hypertension, diabetes (uncomplicated), renal failure, and liver disease were more common among AAs than whites (P < .001, all comparisons in both age groups). Other comorbidities including hypothyroidism were more common among white patients compared to AAs (P < .001, both age groups).		5.09, respectively; aOR: 1.74, 95% CI: 1.46-2.07, respectively).

Weiner JA, Adhia AH, Feinglass JM, et al	Retrospective cohort study (3)	The purpose of this investigation was to evaluate which patient characteristics are associated with extended length of stay (eLOS) of greater than 2 days and nonhome discharge in patients undergoing total hip arthroplasty (THA).	A total of 41,832 patient who underwent primary THA between 2016 and 2018 were included within the study. 81.4% of patients were non-Hispanic white and 92.6% had osteoarthritis (OA) as a principal diagnosis. 55.6% were female, 60% had a Charlson comorbidity index (CCI) of 0, and 49.1% of THAs were completed at an academic institution. Medicaid or uninsured patients represented 5.1% of the included population and 3.9% of patients resided in a low-income zip code.	The authors analyzed the Illinois Hospital Association COMPdata administrative database from 151 Illinois nonfederal hospitals to evaluate patients who underwent primary THA from 2016 to 2018. LOS was classified as 2 days or less, eLOS if greater than 2 days, and very extended LOS (veLOS) if greater than 4 days. Chi square tests were used to determine the significance of associations between home discharge and LOS (grouped as LOS 3 or 4 days and veLOS) and patient sex, age, race and ethnicity, Illinois region, low-	74.7% were discharged home with 64.0% having a LOS of 2 days or less. Only 36.0% of patients had eLOS and 5.3% had veLOS. Very few of those (7.5%) whose LOS was 2 days or less were not discharged home. That was the opposite trend seen for those staying 3 to 4 days (53.7%) and 5 or more days (77.0%) after THA, as they were more likely to be discharged to a nonhome facility. Females represented 65.8% of those with a LOS of 3 or 4 days. Females were 35% more likely than males (Incidence Rate Ratio [IRR] = 1.35, 95% CI 1.29-1.40) to experience eLOS. Those aged 75 years and older were 47% more likely to have eLOS than those

				income zip code, Medicaid/uninsured, time period, obesity, CCI, principal diagnosis, facility BPCI status, facility academic status, facility volume quartile, and Illinois region. A multiple Poisson regression model was estimated to test the simultaneous association between patient and hospital characteristics and nonhome discharge, eLOS, and veLOS.	aged 65 to 74 years (IRR = 1.47, 95% CI 1.40-1.53). Patients with a CCI of 1 were 25% more likely to have eLOS (IRR = 1.25, 95% CI 1.20-1.30). Patients with a CCI of 3 or greater were 59% more likely to have eLOS (IRR = 1.59, 95% CI 1.48-1.70). 41.5% of patients with veLOS were older than 75, compared to 21.9% in the overall cohort. Those older than 75 years were 59% more likely (IRR = 1.59, 95% CI 1.42-1.78) than those aged 65 to 74 years to have veLOS. Non-Hispanic blacks were 42% more likely than non-Hispanic whites to have veLOS (IRR = 1.42, 95% CI 1.19-1.70). Medicaid and uninsured patients were 67% more likely to have

					veLOS than those with other types of insurance (IRR = 1.67, 95% CI 1.33-2.09). Those with CCI of 3 or more were more than 226% more likely to have veLOS than those with CCI of 0 (IRR = 3.26, 95% CI 2.87-3.71). Those aged 75 years, or more were 88% more likely than those 65 to 74 years old to have nonhome discharge (IRR = 1.88, 95% CI 1.77-2.00). Those with a CCI score of 3 were 77% more likely to experience nonhome discharge when compared to those with a CCI of zero (IRR = 1.77, 95% CI 1.63-1.91). Medicaid or uninsured patients were 30% more likely to have a nonhome discharge (IRR = 1.30, 95% CI 1.13-1.49), and non-Hispanic black ethnicity,

					which was 11% more likely to be associated with nonhome discharge than non-Hispanic white ethnicity (IRR = 1.11, 95% CI 1.00-1.23).

Weng HH, Kaplan RM, Boscardin WJ, et al	Prospective observational study (2)	Pilots test the scope, acceptability, and efficacy of an educational videotape and tailored TKR decision aid designed to reduce disparities in TKR knowledge and expectations.	A total of 102 patients (54 African American, 48 Caucasian) completed the baseline survey and 64 patients attended the intervention. There were no significant differences by race between patients completing and those dropping out of the study.	African American and Caucasian male veteran volunteers ages 55-85 years with moderate to severe knee osteoarthritis (OA) were recruited. During group meetings, patients viewed a video about knee OA treatments and were provided a personalized arthritis report that presented predicted patient outcomes should they decide to undergo TKR. Patients completed baseline and postintervention questionnaires that included an adapted Western Ontario and McMaster Universities Osteoarthritis	At baseline (n = 102), African American patients expressed lower expectations about post-TKR outcomes than did Caucasian patients for both pain (WOMAC score 41 versus 34; P = 0.18) and physical function expectations (WOMAC score 38 versus 30; P = 0.13). Among African Americans who underwent the intervention, expected pain and physical function improved to 31 (P = 0.04 versus baseline) and 30 (P = 0.09 versus baseline), respectively. Caucasian patients' expectations changed little. Disparities in baseline knowledge and expectations about TKR may be improved with the combined educational video and tailored decision aid.

				Index (WOMAC) instrument to measure post-TKR expectations (0-100 scale with higher scores reflecting poorer outcomes)	

White RS, Sastow DL, Gaber-Baylis LK, et al	Retrospective cohort study (3)	The purpose of this study was to examine differences in readmission rates by insurance payer, race, ethnicity and income status.	A total of 274,851 adult patients who had undergone THR surgery in California, Florida or New York were included. 154,695 (56.3%) of patients had Medicare, 9,099 (3.3%) had Medicaid and 101,897 (37.1%) had private insurance. 227,354 (82.7%) of all patients were white, 15,644 (5.8%) were black and 14,718 (5.7%) were Hispanic. 155,597 (56.6%) of all patients were female.	The authors analyzed the California, Florida and New York State Inpatient Databases (SID), Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality to identify patients who underwent THR from 2007 to 2011. Inclusion criteria included patients who had undergone THR surgery and were old than 18 years of age. Exclusion criteria included those with missing data on gender, experienced inpatient mortality during their index hospital stay, had	Within 30 days, 15,273 (5.6%) patients were readmitted, including 7.7% of Medicaid patients, 6.8% of Medicare patients, and 3.5% of patients with private insurance. After 30-day readmission, 271 patients (1.8%) died during their hospitalization. When compared to patients who were not readmitted within 30 days, patients readmitted within 30 days were more likely to be older (69.62 ± 13.18 vs. 66.03 ± 12.30, P < 0.0001), be Black (7.4% vs. 5.6%, P < 0.0001) or Hispanic (6.0% vs. 5.3%, P < 0.0001), live in the poorest quartile of median household income in their respective ZIP code (20.3% vs. 16.7%, P < 0.0001), have Medicare (69.1%

				missing information on hospital length of stay (LOS) or days to readmission data, had insufficient follow-up time or lacked primary insurance status information. Categorical variables were compared using Chi squared tests or Fischer's exact tests and continuous variables were compared using analysis of variance (ANOVA) or Kruskal-Wallis tests. Logistic regression analysis was completed to evaluate the effect of racial and socioeconomic disparities on 30 and 90-day readmissions.	vs. 55.5%, P < 0.0001) and Medicaid (4.6% vs. 3.2%, P < 0.0001) as insurance providers. Patients readmitted within 30-days had an initial hospital course with a longer length of stay (4 days vs. 3 days, P < 0.0001) and have greater total hospital charges ($69,471 vs. $63,474, P < 0.0001) than those not readmitted up to 30 days postoperatively. Additionally, readmitted patients were more likely to have suffered cardiovascular, pulmonary, infectious, and intraoperative complications during their initial postoperative hospitalization (P < 0.0001 for each). The most common reasons for 30-day readmissions were wound

					infection (15.7% Private insurance vs. 19.3% Uninsured), atrial fibrillation (5.9% Private insurance vs. 18.4% Medicare), urinary tract infection (6.3% Private insurance vs. 13.3% Medicare), and pneumonia (3.4% Private insurance vs. 6.9% Medicare). Within 90 days, 28,075 (10.2%) patients were readmitted, including 14.5% of Medicaid patients, 11.9% of Medicare patients, and 7.3% patients with private insurance. After 90-day readmission, 432 (1.5%) died during their hospitalization. When compared to patients who were not readmitted within 90 days, patients readmitted within 90 days were more likely to be older (68.39 ±

					13.45 vs. 65.98 ± 12.22, P < 0.0001), be Black (7.0% vs. 5.5%, P < 0.0001) or Hispanic (5.7% vs. 5.3%, P < 0.0001), live in the poorest quartile of median household income in their respective ZIP code (19.7% vs. 16.6%, P < 0.0001), have Medicare (65.7% vs. 55.2%, P < 0.0001) and Medicaid (4.7% vs. 3.2%, P < 0.0001) as insurance providers. Patients readmitted within 90-days had greater total hospital charges ($68,767 vs. $63,236, P < 0.0001) than those not readmitted up to 90 days postoperatively. The most common reasons for 90-day readmission compared to private insurance were atrial

					fibrillation (5.5% Private Insurance vs. 16.9% Medicare), urinary tract infection (4.5% Private insurance vs. 12.0% Medicare), wound infection (9.3% Private insurance vs. 10.7% Other Insurance), and pneumonia (2.7% Private insurance vs. 6.2% Medicare). Patients insured by Medicare (Odds Ratio [OR] = 1.23, 95% Confidence Interval [CI] 1.17–1.29, P < 0.05) and Medicaid (OR = 1.58, 95% CI 1.44–1.73, P < 0.05) had higher likelihoods of being readmitted up to 30 days postoperatively than patients with private insurance. Similarly, patients insured by Medicare (OR = 1.20, 95% CI 1.16–1.25, P < 0.05) and Medicaid (OR

					1.52, 95% CI 1.42–1.62, P < 0.05) also had higher likelihoods of being readmitted up to 90 days postoperatively than patients with private insurance. Patients living in geographic areas with the highest median household income values of their state were less likely to be readmitted 30 and 90 days postoperatively than those living in the poorest income quartiles of their state (30-day OR = 0.89, 95% CI 0.85–0.94, P < 0.05 and 90-day OR = 0.91, 95% CI 0.87–0.94, P < 0.05). Blacks were more likely than Whites to be admitted up to 30 and 90 days postoperatively (30-day OR = 1.20, 95% CI 1.11–1.29, P < 0.05 and 90-day OR = 1.08, 95% CI 1.02–1.14, P < 0.05).

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