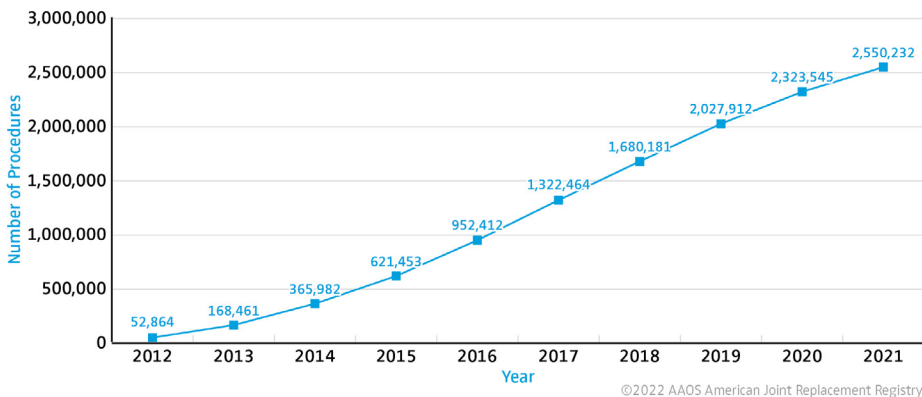# 2022 AJRR Annual Report Preview

Overview

The number of procedures reported to the American Joint Replacement Registry (AJRR) continues to increase. The 2022 AJRR Annual Report now represents 2,550,232 primary and revision hip and knee arthroplasty procedures performed between 2012 and 2021.
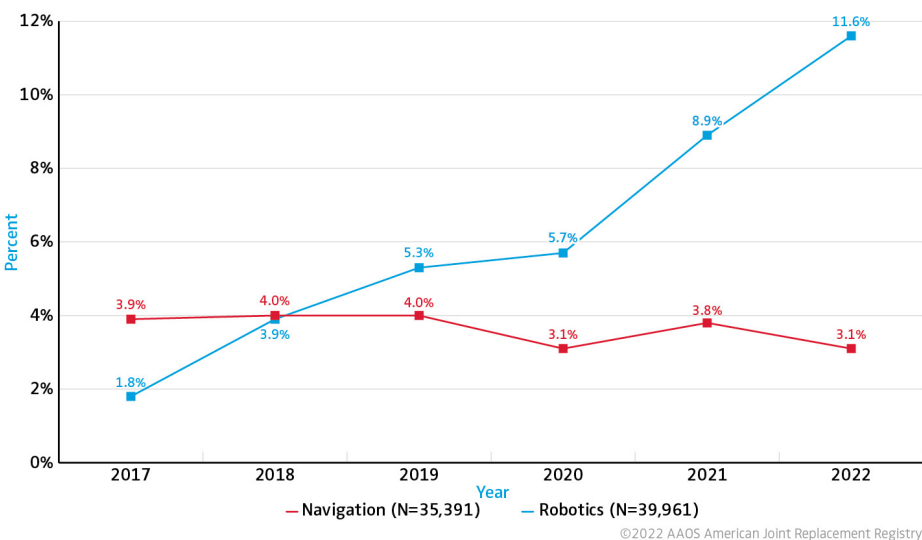
Cumulative Procedure Volume, 2012-2021 (N=2,550,232)

©2022 AAOS American Joint Replacement Registry

Utilization of Robotics and Computer Navigation

For this year's Annual Report, utilization of technology for surgical assistance in primary total hip and knee arthroplasty were analyzed for the first time. The utilization of both computer navigation and robotics has increased substantially over the past few years. The percentage of elective primary total knee arthroplasty (TKA) cases utilizing robotic assistance is now close to 12%. A similar analysis was performed for primary elective total hip arthroplasty (THA) as well showing an increasing utilization trend although technology remains less prevalent in THA compared to TKA. A detailed table comparing procedures performed with technology compared to conventional TKA or THA are also included in the report.

Technology Assisted TKA Rates, Jan 2017 – Mar 2022

— Navigation (N=35,391) — Robotics (N=39,961)

©2022 AAOS American Joint Replacement Registry

Digital Copy Now Available!

Stop by the AJRR Booth #1327 or visit aaos.org/AJRRannualreport

In an attempt to study patient characteristics that might be associated with the use of technology, demographic information was collected for those patients whose TKA or THA was performed with robotics or navigation and compared to those patients where technology was not used. Interestingly, the results did not show any clear clinically meaningful differences between groups for TKA or THA cohorts.

Technology Assisted TKA

	Yes (N = 61,637)	No (N = 359,618)	NR (N = 889,917)	Total (N = 1,311,172)
Age				
Mean (SD)	67.53 (9.36)	67.38 (9.31)	67.18 (9.48)	67.25 (9.43)
N (N Missing)	61,637 (0)	359,618 (0)	889,917 (0)	1,311,172 (0)
Patient BMI				
Mean (SD)	32.57 (7.43)	32.50 (6.61)	32.46 (6.54)	32.48 (6.63)
N (N Missing)	47,425 (14212)	240,078 (119540)	378,239 (511678)	665,742 (645430)
Charlson Comorbidity Index (CCI)				
Mean (SD)	2.70 (1.40)	2.61 (1.36)	2.52 (1.30)	2.55 (1.32)
N (N Missing)	61,637 (0)	359,618 (0)	889,917 (0)	1,311,172 (0)
Age Category				
<50	1,839 (2.98%)	10,938 (3.04%)	28,658 (3.22%)	41,435 (3.16%)
50-59	10,228 (16.59%)	60,307 (16.77%)	157,787 (17.73%)	228,322 (17.41%)
60-69	23,066 (37.42%)	137,489 (38.23%)	337,377 (37.91%)	497,932 (37.98%)
70-79	20,518 (33.29%)	116,865 (32.50%)	280,382 (31.51%)	417,765 (31.86%)
80-89	5,724 (9.29%)	32,671 (9.08%)	82,140 (9.23%)	120,535 (9.19%)
>=90	262 (0.43%)	1,348 (0.37%)	3,573 (0.40%)	5,183 (0.40%)
Missing	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Gender				
Female	36,854 (59.79%)	218,458 (60.75%)	542,968 (61.01%)	798,280 (60.88%)
Male	24,733 (40.13%)	141,069 (39.23%)	342,696 (38.51%)	508,498 (38.78%)
NR / Missing	50 (0.08%)	91 (0.03%)	4,253 (0.48%)	4,394 (0.34%)

SD=Standard Deviation, NR=Not Reported, BMI=Body Mass Index

©2022 AAOS American Joint Replacement Registry

Patient-Reported Outcome Measures

The AJRR collects patient-reported outcomes measures, which is one of the major benefits of the AJRR compared to other large data sources and represents an excellent opportunity for further research into the practice of joint replacement. The 2022 AJRR Annual Report is the first annual report to include age-stratified PROM analysis. As an example, age-stratified KOOS, JR. and PROMIS-10 data for primary total knee arthroplasty is depicted below.

Age-stratified Change Between Preoperative and 1-Year Postoperative PROM Scores after Primary Knee Arthroplasty by PROM for Patients 55 Years and Over, 2012-2021

Patient-Reported Outcome Measure (PROM)	PROM Component	Age Group (Years)	Patients with Preoperative Score	Patients with Linked Postoperative Score	Response Rate, Percentage of Patients Who Completed a Preoperative and 1-Year Score	Patients with Meaningful Improvement*
KOOS, JR. (Knee Disability and Osteoarthritis Outcome Score)	Score	55-64	19,438	4,270	22.00%	86.10%
		65-74	31,476	8,487	27.00%	85.40%
		75-84	15,512	3,941	25.40%	84.60%
		>85	1,906	439	23.00%	85.40%
PROMIS-10 (Patient-Reported Outcomes Measurement Information System 10)	Mental T	55-64	13,978	3,092	22.10%	36.50%
		65-74	23,447	6,543	27.90%	32.40%
		75-84	11,582	3,137	27.10%	28.90%
		>85	1,476	338	22.90%	26.60%
	Physical T	55-64	13,969	3,090	22.10%	67.20%
		65-74	23,447	6,544	27.90%	65.60%
		75-84	11,578	3,137	27.10%	61.00%
		>85	1,476	338	22.90%	57.70%

Meaningful improvement was calculated by minimal clinical important difference (MCID). MCID was determined to be a positive change score of half the pooled standard deviation.

©2022 AAOS American Joint Replacement Registry

Publications and Presentations

Many publications and presentations have been developed utilizing AJRR data and can be found on the AAOS website at aaos.org/registries/publications/papers-and-presentations.

Download a digital copy of the full 2022 AJRR Annual Report at aaos.org/AJRRannualreport.

For more Registry information, contact RegistryInfo@aaos.org