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Total joint arthroplasty patient demographics before and after COVID-19 surgery restrictions

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Introduction

Total joint arthroplasty (TJA, referring to total hip arthroplasty (THA) and total knee arthroplasty (TKA)) is a commonly-performed procedure that greatly improves the quality of life of recipients. Previous studies have documented utilization, access, and outcome disparities in the United States. In 2020, the COVID-19 pandemic caused cessation of non-emergent TJA operations via a ban on elective surgeries between mid-March and April of 2020.

Our hypothesis was that compared with the previous year, patients who underwent TJA procedures most immediately after the cessation of COVID-19 restrictions would be more likely to be white, privately insured, have a lower BMI, and have a lower Charlson Comorbidity Index (CCI) when compared with TJA patients from 2019.

Methods

An IRB-approved cross-sectional study was performed.

A private healthcare system database was used to examine the demographics of patients undergoing TJA (CPT codes 27130/primary THA and 27447/primary TKA) from May to December 2019 (Pre-COVID-19) and May to December 2020 (Post-COVID-19 elective procedure restrictions).

Acknowledgements

Results

Variable	All (2033)	Pre-COVID (882)	COVID (1151)	P-values	% Treated in COVID
Black Race	665 (33.1, 23)	281 (32.3, 13)	384 (33.7, 10)	0.329	57.7
White Race	1296 (64.5, 23)	564 (64.9, 13)	732 (64.2, 10)		56.5
Other Race	72 (3.5, 23)	37 (4.2, 10)	35 (3, 10)		48.6
Male Sex	772 (38)	327 (37.1)	445 (38.7)	0.489	57.6
Female Sex	1261 (62)	555 (62.9)	706 (61.3)		56
Private Insurance	667 (32.9, 3)	309 (35)	358 (31.2, 3)	.043	53.7
Medicaid	174 (8.6, 3)	60 (6.8)	114 (9.9, 3)		65.5
Medicare	1110 (54.7, 3)	488 (55.3)	622 (54.2, 3)		56
Smoker	436 (21.4)	173 (19.6)	263 (22.8)	0.081	60.3
Non-Smoker	1597 (78.6)	709 (80.4)	888 (77.2)		55.6
THA	476 (23.4)	166 (18.8)	310 (26.9)	<.001	65.1
TKA	1557 (76.6)	716 (81.2)	841 (73.1)		54
Age	64.85 (9.48)	65.23 (9.41)	64.56 (9.52)	0.113	
CCI	1.05 (1.58)	1.03 (1.55)	1.07 (1.61)	0.557	
LOS	0.24 (0.59)	0.33 (0.63)	0.18 (0.55)	<.001	
BMI	36.33 (8.71, 9)	36.23 (8.9, 9)	36.41 (8.57)	0.641	
Month	8.32 (2.24)	8.4 (2.3)	8.26 (2.19)	0.189	

Table 1: Demographic Characteristics based on when the surgery was conducted (Pre/Post Covid-19). Count (%) are reported for categorical variables and mean (sd) were reported for continuous variables. When missing values are present, the number of missing values were listed in parentheses. THA = total hip arthroplasty. TKA = total knee arthroplasty. CCI = Charlson comorbidity index. LOS = length of stay. Month = Month of surgery. BMI = Body Mass Index. Continuous variables are age, CCI, LOS, BMI, and Month.
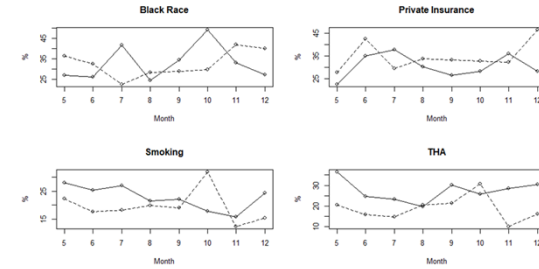

Figure 2: Demographic % by month in 2019 (dotted) and 2020 (solid)
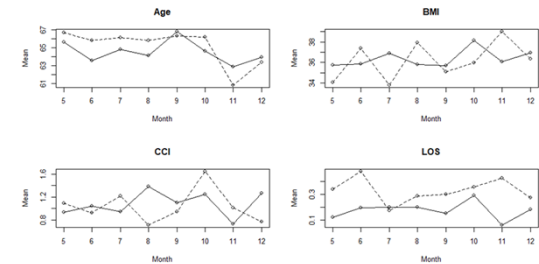
Figure 3: Mean of continuous demographic info by month in 2019 (dotted) and 2020 (solid)

Variable	OR (CI)	P-value
Black Race v Other	1.06 (0.87-1.29)	0.573
Male Gender	1.09 (0.9-1.32)	0.366
Private Insurance	0.71 (0.58-0.87)	0.001
Smoker	1.16 (0.93-1.45)	0.187
THA vs TKA	1.61 (1.29-2.01)	<.001
BMI (continuous)	1 (0.99-1.01)	0.611
Age (continuous)	0.99 (0.98-1)	0.048
CCI (continuous)	1.03 (0.97-1.09)	0.402

Figure 1: Multivariable logistic regression to predict whether a surgery was performed during COVID-19.

Conclusion

- There were more TJA procedures performed in this private healthcare system from May-December 2020 than in May-December 2019.
- Of those 2020 TJAs, a greater percentage were THA compared to 2019.
- The proportion of patients who underwent a TJA with Medicaid insurance increased from May-December 2020 when compared to 2019.
- 2020 TJA patients stayed in the hospital a significantly shorter amount of time when compared to 2019.
- No significant difference in the patient sex, race, BMI, smoking status, or age between the two groups.