Demographics of Periprosthetic Joint Infection Rates

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Introduction

Risk factors for periprosthetic joint infections (PJIs) following total joint arthroplasties (TJAs) include patient demographics and comorbidities such as age, gender, obesity, rheumatoid arthritis, and diabetes.[1] However, there is insufficient research analyzing the number of PJIs in certain racial subsets of the population despite the presence of disparities due to race that still exists in orthopedics today.[2] The purpose of this study is to investigate if PJI rates differ by race, as well as other patient demographics. This may uncover valuable information on how race relates to PJIs which is frequently unaccounted for in other studies. This study aims to analyze the current data to highlight possible disparities in PJI prevalence due to racial background.

Methods

This retrospective cohort extracted patient data from Reachnet for patients with procedure codes for THA, TKA, and TSA, as well as diagnostic codes for PJIs to determine rates of PJIs by patient demographics. Patient demographic data included race, alcohol use, smoking, insurance, BMI > 30, age ≥ 70, procedure year, and Charlson Comorbidity Index. Patients without a follow-up within one year, missing BMI, or non-public/private insurance were excluded. All in all, this resulted in 21,735 patients total. Percents, counts, multivariable logistic regressions were used to summarize the data collected.

Results

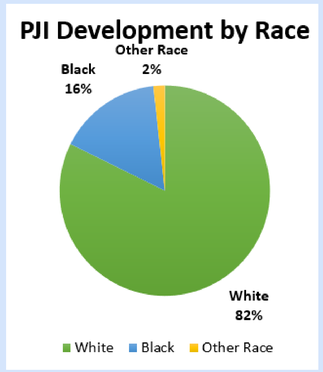


Figure 1: Out of the total number of patients included in the study (21,735), a total of 746 patients developed a PJI following a TJA. Out of the 746 patients, 82% were white, 16% were black, and 2% were of another race.

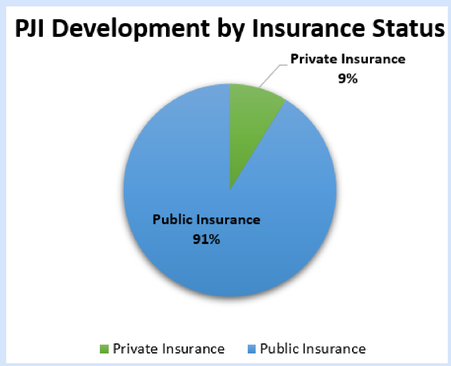


Figure 2: Out of the total number of patients included in the study (21,735), a total of 746 patients developed a PJI following a TJA. Out of the 746 patients, 9% had private insurance and 91% had public insurance.

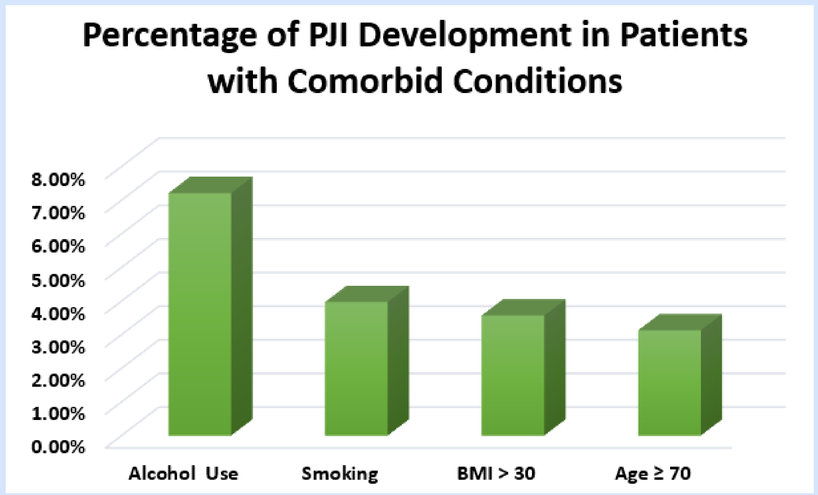
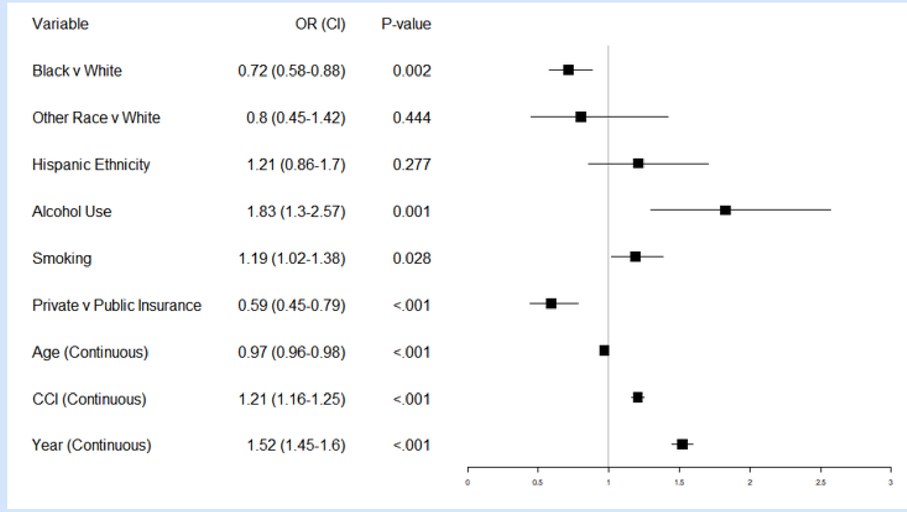


Figure 3: This figure displays frequency of PJI development in patients who used alcohol, smoked, had a BMI >30, or were over the age of 70. In those who used alcohol, about 7% developed a PJI post TJA. In those who were smokers, had a BMI >30, or were over the age of 70 about 3% developed a PJI.

Results Continued



Variable	OR (CI)	P-value
Black v White	0.72 (0.58-0.88)	0.002
Other Race v White	0.8 (0.45-1.42)	0.444
Hispanic Ethnicity	1.21 (0.86-1.7)	0.277
Alcohol Use	1.83 (1.3-2.57)	0.001
Smoking	1.19 (1.02-1.38)	0.028
Private v Public Insurance	0.59 (0.45-0.79)	<.001
Age (Continuous)	0.97 (0.96-0.98)	<.001
CCI (Continuous)	1.21 (1.16-1.25)	<.001
Year (Continuous)	1.52 (1.45-1.6)	<.001

Figure 4: This figure displays a multivariable logistic regression analysis for patient's with PJI development in one year.

Conclusions

- From our specific cohort, black patients had a significantly decreased risk of PJI within 1 year (Odds ratio = .72, 95% CI=.58-.88) compared to white patients.
- Other demographics such as alcohol use, smoking, and increased Charlson Comorbidity Index contributed to considerably higher rates.
- Additionally, rates of PJIs have significantly increased in recent years.
- Increased age and private insurance were associated with decreased rates of PJI.

References

1.Kong L, Cao J, Zhang Y, Ding W, Shen Y. Risk factors for periprosthetic joint infection following primary total hip or knee arthroplasty: a meta-analysis. Int Wound J. 2017;14(3):529-536. doi:10.1111/iwj.12640

2.Singh JA, Lu X, Rosenthal GE, Ibrahim S, Cram P. Racial disparities in knee and hip total joint arthroplasty: an 18-year analysis of national Medicare data. Ann Rheum Dis. 2014;73(12):2107-2115. doi:10.1136/annrheumdis-2013-203494