# Association between Primary Language and Postoperative Outcomes in Total Joint Arthroplasty: Insights from Two Hospitals in the Northeastern United States

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INTRODUCTION:

Past research has suggested that non-English speaking patients have worse outcomes following total knee or hip arthroplasty (TKA/THA). However, these studies have mainly originated from the same institution in the West region of the United States, limiting generalizability of the findings. This study aimed to assess the association between patients' primary language and surgical outcomes in TKA and THA across two hospitals at an institution in the Northeastern United States. In line with the previous literature, we hypothesized that non-English speakers would experience inferior postoperative outcomes.

METHODS: A retrospective cohort study was conducted on elective TKA or THA patients between 2018 and 2021 in two hospitals at a single academic health system. The hospitals were analyzed separately since Hospital #1 participated in the Comprehensive Care for Joint Replacement model while Hospital #2 did not, which could differentially affect outcomes. Patients' primary language was categorized as English, Spanish, and other. Multivariable logistic regression models examined the association between primary language and outcomes of same-day discharge, non-home discharge (for inpatient surgeries only), and 30-day return to hospital. Multivariable generalized linear models examined the association between primary language and the outcome of hospital length of stay in days for inpatient surgeries only. We report adjusted odds ratios (OR) or % difference and 95% confidence intervals (CI).

RESULTS:

Hospital #1 comprised 2,272 patients (50% TKA), with 3.8% reporting Spanish as their primary language and 2.0% reporting other non-English languages. Hospital #2 encompassed 3,774 patients (62% TKA), with 7.3% reporting Spanish as their primary language and 2.7% reporting other non-English languages. There were no significant associations between language and same-day discharge, non-home discharge, or 30-day returns to the hospital for patients in either hospital (all P > 0.05). However, in Hospital #1, patients with other non-English primary languages had a longer length of stay (+16.4%; 95% CI 0.7%-34.5%; p=0.04) compared to those with English as a primary language, while there was no significant difference for Spanish (vs. English). In contrast, in Hospital #2, patients with Spanish as their primary language had a shorter length of stay (-7.1%; 95% CI -13.5%- -0.2%; p=0.04), with no significant differences observed for patients with other languages compared to English-speaking patients.

DISCUSSION AND CONCLUSION: This study demonstrated overall comparable postoperative outcomes for patients with Spanish or other primary language compared to English. While length of stay did vary by language, the pattern was inconsistent by language group and the relative differences may not be clinically meaningful. These findings, which diverge from previous literature, highlight the limited generalizability of single-institution studies and may reflect different compositions of non-English primary language in study populations as well as existence of different language-based supports across institutions.

| Outcomes | Hospital #1(N=2,272) | | | | Hospital #2(N=3774) | | | |
|---|---|---|---|---|---|---|---|---|
| | Spanish | | Other | | Spanish | | Other | |
| | OR or % difference (CI 95%) | P-value | OR or % difference (CI 95%) | P-value | OR or % difference (CI 95%) | P-value | OR or % difference (CI 95%) | P-value |
| Same-day discharge[1] | 0.8(0.4-2.0) | 0.76 | 1.4(0.5-3.5) | 0.51 | 0.9(0.6-1.4) | 0.74 | 0.9(0.5-1.7) | 0.82 |
| LOS[2] | -9.0(-18.3-1.3) | 0.08 | 16.4(0.7-34.5) | 0.04 | -7.1(-13.5- -0.2) | 0.04 | -5.3(-15.2-5.8) | 0.34 |
| Non-home discharge[1] | 1.0(0.5-2.2) | 0.99 | 1.7(0.7-4.2) | 0.24 | 0.9(0.6-1.3) | 0.60 | 1.6(1.0-2.6) | 0.07 |
| 30-day return to hospital[1] | 0.3(0.02-4.6) | 0.39 | 0.5(0.04-8.5) | 0.66 | 1.1(0.5-2.5) | 0.86 | 1.8(0.7-4.7) | 0.25 |

Figure 1. Adjusted associations between primary language (English as reference) and outcomes after total joint arthroplasty across Hospital #1 and Hospital #2

[1] Odds Ratio

[2] % difference