

Primary Spoken Language and Regional Anesthesia Use in Joint Replacement Surgery

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Introduction

- Primary language spoken has been shown to impact perioperative care in total joint arthroplasties.
- We investigated impact of primary spoken language on receipt of adductor canal and interscalene nerve blocks in knee and shoulder arthroplasties.
- Hypothesis: patients with a non-English language would have equal rates of regional anesthesia as patients who are English-speaking.

Methods

- Conducted review of 2702 patients who underwent knee or shoulder arthroplasties from 2014-2024, aged 18 years or older.
- We applied the Two One-Sided Tests (TOST) procedure for equivalence testing for language and race. All observed differences were contained within the pre-specified equivalence margin of $\pm 10\%$, indicating statistical and clinical equivalence.
- Continuous variables were assessed using two-sample t-tests, and categorical variables were evaluated using Fisher's exact tests.

Results

	Peripheral nerve block received	Peripheral nerve block not received	P-value
Primary Language Spoken (%)			0.666
English	1795 (97)	197 (96.6)	
Non-English	55 (3.0)	7 (3.4)	
Gender (%)			0.014
Female	1054 (57.0)	135 (66.2)	
Male	796 (43.0)	69 (33.8)	
Mean age in years (SD)	67.1 (9.5)	66.8 (9.3)	0.657
Race (%)			0.020
Black	96 (5.2)	13 (6.4)	
White	1389 (75.1)	133 (65.2)	
Hispanic	139 (7.5)	21 (10.3)	
Other	226 (12.2)	37 (18.1)	
Insurance Type (%)			0.677
Medicaid	30 (1.6)	2 (1.0)	
Medicare	1109 (59.9)	120 (58.8)	
Non-Medicaid/Medicare Government Healthcare	71 (3.8)	5 (2.5)	
Private	640 (34.6)	77 (37.7)	
Length of Stay (SD)	2.0 (1.8)	2.7 (2.8)	<0.001
Procedure type (%)			
Continuous	758 (41.0)		
Single	1092 (59.0)		
ASA score (SD)	2.5 (0.5)	2.4 (0.5)	0.047

Table 1. Patient demographics and clinical characteristics stratified by nerve block status.

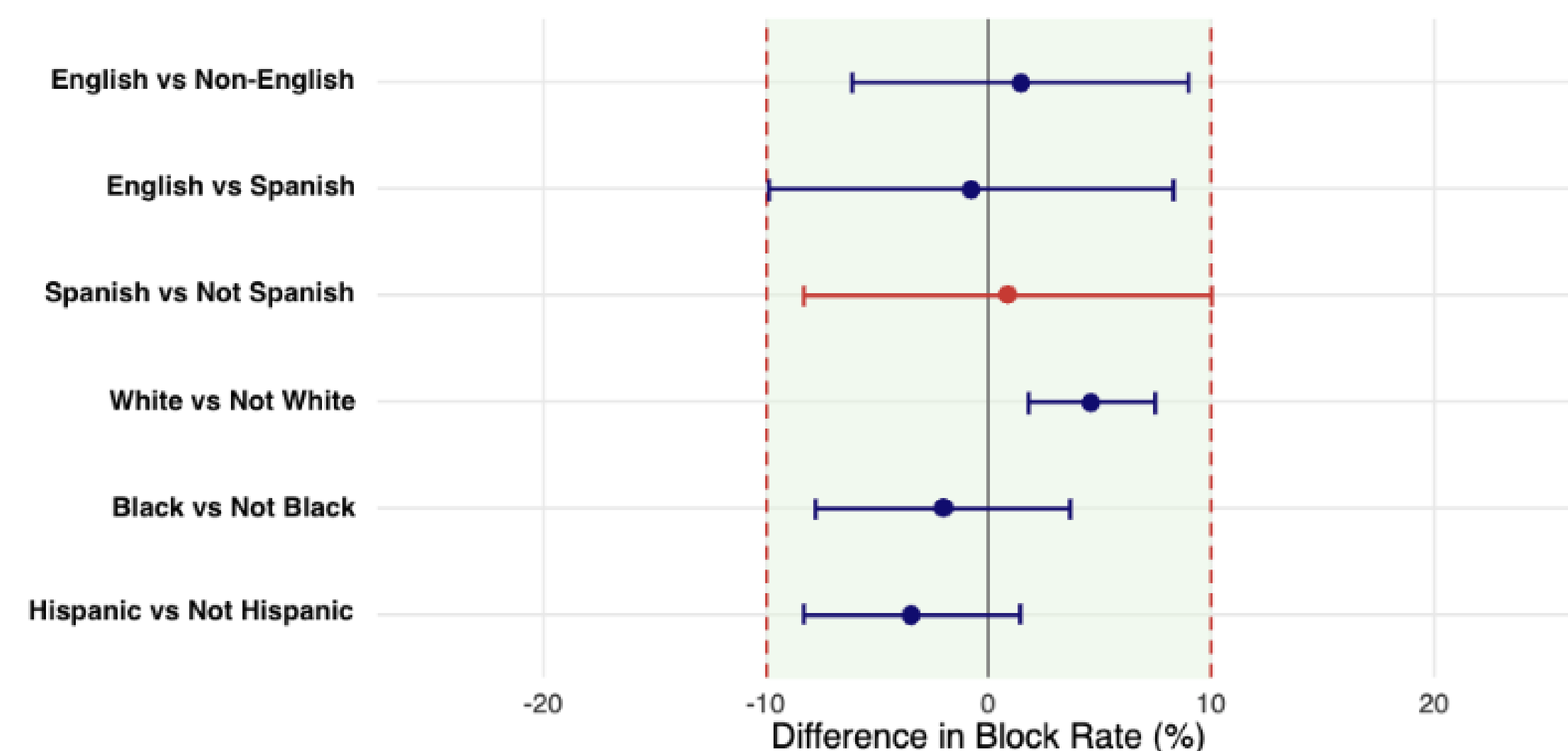


Figure 1. Equivalence Test (TOST) of likelihood of receiving peripheral nerve block based on language and race.

Discussion

- Equivalence between language groups and racial groups may be due to existing systems that promote increased nerve block receipt with designated teams performing blocks, availability of video interpreters, and incorporation of nerve block counseling in surgery discussions.
- Patients who did not receive a block had a longer average stay (mean = 2.72 days) compared to those who did (mean = 1.99 days; $p < 0.001$).
- Block recipients were found to have a slightly higher ASA score (mean = 2.52 versus 2.44; $p=0.047$)
- Limitations of this study include it being retrospective, having a small number of patients in non-English language groups, and inclusion of self-reported data for primary spoken language.

Conclusion

- In our study, primary spoken language did not significantly influence the likelihood of receiving regional anesthesia.
- This study highlights the potential benefits of standardized regional block protocols for knee and should arthroplasties.
- More studies are needed to elucidate the nuanced patterns behind differences in care based on primary spoken language so that patients can have more equitable access to anesthesia care.

References

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