

# Associations Between Limited English Proficiency and Utilization, Care Processes, and Outcomes in Orthopaedic Surgery Patients: A Systematic Review

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**Disclosures:** R. Busigo-Torres (N), A. Yendluri (N), B.Z. Stern (9- American Association for Hand Surgery), R. Rajjoub (N), M. Restrepo Mejia (N), G. Willson (N), D.D. Chen (3B- Stryker; DePuy/Johnson & Johnson; Monogram Orthopedics), C. S. Moucha (N), B.L. Hayden (3B- DePuy/Johnson & Johnson; Heraeus), J. Poeran (8- Clinical Orthopaedics and Related Research)

**INTRODUCTION:** Extensive research has explored disparities in the care processes and outcomes of orthopaedic surgeries across various demographics. However, there is a growing recognition of the influence of language barriers on delivering equitable care to patients with limited English proficiency (LEP). This review seeks to synthesize existing literature concerning language-based inequalities within English-speaking countries as they pertain to orthopaedic surgery patients.

**METHODS:** On June 9, 2023, a systematic search of four databases (PubMed, Embase, Web of Science, and Scopus) was executed by a university librarian. We included peer-reviewed observational studies that examined the association between LEP (versus English proficiency) and a relevant outcome among pediatric and/or adult patients undergoing orthopaedic surgery or receiving care within an orthopaedic surgery setting. Articles in languages other than English, conference abstracts, commentaries, reviews, protocols, letters to the editor, and studies where language functioned only as a covariate were excluded. Outcomes were categorized as utilization of orthopaedic surgery, care processes (both clinical care and patient engagement), treatment outcomes, and patient satisfaction. The quality of each study was evaluated using the Newcastle-Ottawa scale for cohort or cross-sectional studies.

**RESULTS:** Among 6,965 screened records (Figure 1), 33 full texts met our inclusion criteria (27 from USA, 4 from Australia, 2 from Canada). The most common procedure studied was total hip and/or knee arthroplasty (16/33 studies). For orthopaedic surgery utilization, 2 of 2 studies identified decreased utilization of orthopaedic procedures (ACL reconstruction, revision total joint arthroplasty) in patients with LEP. Three of 8 studies identified significant differences for patients with LEP in clinical care processes, exemplified by one study that found increased time to surgery for ACL reconstruction. Pertaining to patient engagement, 5 of 9 studies found a significant association between LEP and the metric of interest that suggested language-based barriers to patients engaging in their care; for instance, 2 studies indicated that LEP patients were less likely to complete patient-reported outcome measures. Regarding treatment outcomes, 13 of 14 studies identified at least one inferior treatment outcome for orthopaedic surgery patients with LEP; for instance, 5 studies identified extended hospital stays, 4 studies observed higher rates of non-home discharge, and 4 studies showed poorer postoperative health-related quality of life for LEP patients. With respect to patient satisfaction, 1 of 3 studies reported reduced satisfaction for patients with LEP, specifically with inpatient rehabilitation after lower extremity fracture. Regarding quality assessment, the representativeness of the cohort or sample was the most frequently unmet metric (30/33), with most studies based on data from a single institution. Additionally, 8 studies reported only unadjusted associations between LEP and the outcome of interest. While the majority of studies defined LEP as a primary/preferred language other than English, 9 of 33 studies alternatively or additionally considered interpreter need or use.

**DISCUSSION:** Within this systematic review, a substantial portion of the studies identified significant associations between LEP and outcomes of interest, including reduced surgery utilization, limitations in clinical care processes, diminished patient engagement, poorer treatment results, and decreased patient satisfaction. Since most of these studies took place in a single institution, any heterogeneity of findings may be partially attributable to variation in available resources for non-English-speaking patients in each institution. Clinicians and orthopaedic healthcare institutions should prioritize allocating additional resources for patients with LEP to mitigate potential language barriers within the healthcare setting.

**SIGNIFICANCE/CLINICAL RELEVANCE:** In 2019, 1 out of every 5 individuals in the United States communicated in a language other than English within their households. This review’s findings highlight potential language-based disparities across studies that warrant future investigation to improve equitable care processes and outcomes in orthopaedic surgery.

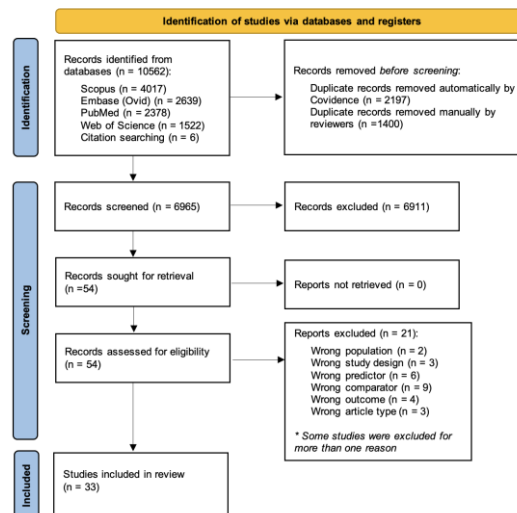


Figure 1. PRISMA flow diagram