

REVIEW ARTICLES

Impact of Limited English Proficiency on Perioperative Care with a Focus on Spanish-Speaking Populations

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ABSTRACT

Background

Hispanic and Latino populations now comprise approximately 20% of the U.S. population, and Spanish is the most common non-English language spoken in the United States. Among Spanish-speaking individuals, 39% report limited English proficiency (LEP), defined as a limited ability to communicate in English at a level that permits effective interaction with healthcare providers. Despite federal mandates requiring language access in healthcare settings, adherence to these standards remains inconsistent. Surgical care presents unique communication challenges given the complexity of informed consent, perioperative risk counseling, and postoperative instructions. This review examines the impact of language barriers across the perioperative continuum in LEP surgical patients, with particular attention to Spanish-speaking populations.

Methods

A structured literature review was conducted using PubMed. Search terms included combinations of: “limited English proficiency,” “language barrier,” “Spanish-speaking,” “interpreter services,” “surgery,” “perioperative,” “postoperative,” “complications,” “readmission,” and “length of stay.” Studies were included if they examined surgical patients with LEP or Spanish-speaking populations and reported measurable perioperative or postoperative outcomes, published in peer-reviewed English-language journals. Editorials, case reports, and studies focused exclusively on non-surgical care were excluded. Data were organized thematically and analyzed via qualitative synthesis.

Results

Thirty-four studies met inclusion criteria. LEP patients face barriers across the entire perioperative continuum. They are more likely to present for emergent rather than elective surgery and experience longer wait times for transplant and surgical evaluation. Informed consent documentation was consistently incomplete for LEP patients, with frequent use of ad hoc interpretation by family members, including bilingual minors. Interpreter utilization was associated with shorter length of stay and improved pain management, though documentation of interpreter use was inconsistent. LEP patients received less

frequent pain assessments, experienced longer wait times for analgesia, and had higher rates of urgent readmission. Postoperative complications including venous thromboembolism and pneumonia were elevated in some surgical specialties, though findings were mixed across studies. LEP patients also demonstrated significantly lower use of patient portals and telemedicine during follow-up. Language-concordant care and language-serving institutions were associated with improved outcomes, including lower readmission rates.

Conclusions

Language barriers represent a modifiable risk factor throughout the surgical care continuum. While interpreter services improve perioperative outcomes, they do not fully eliminate disparities. Language-concordant care, standardized interpreter training, and institutional policies that prioritize linguistically appropriate communication are essential to achieving equitable surgical care for LEP patients. Language discordance should be recognized as a patient safety concern rather than solely a cultural consideration. Future research should prioritize prospective, multi-institutional studies with standardized LEP definitions and greater evaluation of language-concordant surgical care across diverse linguistic communities.

INTRODUCTION

Linguistic diversity within the United States has increased substantially over the past decade, particularly among Hispanic and Latino populations. The Hispanic/Latino community now makes up approximately 20% of the U.S. population.¹ Along with the increasing ethnic diversity comes an increase in linguistic variety. According to the 2020 census, approximately 67.8 million people speak a language other than English at home. Spanish is the most common non-English language spoken in the United States. Among individuals who speak Spanish as their primary language at home, 39% report speaking English “less than very well,” which is commonly how researchers define limited English proficiency (LEP).² In a medical context, LEP may be more precisely defined as a limited ability to speak, read, write, or understand English at a level that permits effective interaction with healthcare professionals.

Millions of patients face barriers associated with limited English proficiency in their medical care. Barriers associated with LEP have been linked to disparities in healthcare access, patient understanding, and clinical outcomes.³ In surgical settings, effective communication is particularly critical due to the complexity of informed consent discussions, perioperative risk counseling, and postoperative discharge instructions. Studies have documented poor compliance across major hospital systems with standards for culturally and linguistically appropriate services.⁴

Under the National Standards for Culturally and Linguistically Appropriate Services and Section 1557 of the Affordable Care Act, healthcare institutions are required to provide meaningful language access for patients with limited

English proficiency. These standards include offering language assistance services at no cost, informing patients of available language services both verbally and in writing, ensuring interpreter competency through training and certification, and providing accessible written and digital materials in languages commonly spoken within the service area.^{5,6}

When surveyed, 13% of hospitals reported compliance with all four standards.⁴ In addition to non-adherence to national standards, LEP patients seem to be broadly excluded from patient-reported outcome measures (PROMs) surveys. Providers who regularly complete PROMs were interviewed and patterns showed that LEP patients were regularly excluded due to systematic exclusion or barriers of implementation.⁷ This is particularly concerning given a 2007 study demonstrating that 49% of adverse events among LEP patients resulted in physical harm compared with 29% among English-speaking patients. This study also found 52% of adverse events among LEP patients were attributable to communication failures.⁸

Although much of the literature evaluates limited English proficiency within the healthcare system rather than within specialty specific contexts, these findings are particularly relevant for surgical care given the high-risk nature of the specialty. Surgical care presents unique communication challenges because critical information regarding risk, anesthesia, recovery, and discharge must often be conveyed within limited time parameters. In addition, the majority of research is conducted evaluating LEP broadly rather than language-specific populations; these findings are particularly relevant for Spanish-speaking patients, who represent the largest LEP group in the United States. This review examines existing literature regarding the impact of language discordance across the perioperative continuum, including informed consent comprehension, postoperative complications, pain management, and follow-up adherence.

METHODS

This study was conducted as a structured literature review examining the impact of Spanish-language proficiency and language concordance on perioperative and postoperative outcomes in surgical patients. A comprehensive literature search was performed using PubMed. Search terms included combinations of the following keywords: “limited English proficiency,” “language barrier,” “Spanish-speaking,” “interpreter services,” “surgery,” “perioperative,” “postoperative,” “complications,” “readmission,” and “length of stay.” Reference lists of selected articles were also reviewed to identify additional relevant studies.

Studies were included if they:

1. Examined surgical patients

2. Evaluated Spanish-speaking or limited English proficiency populations
3. Assessed surgical, perioperative, or postoperative outcomes
4. Were conducted in countries where the primary language is English
5. Were published in peer-reviewed journals
6. Were available in English

Studies were excluded if they:

- Focused exclusively on non-surgical medical care
- Did not distinguish language proficiency from ethnicity
- Did not report measurable clinical or patient-centered outcomes
- Were editorials, opinion pieces, or case reports

Titles and abstracts were screened for relevance. Full-text review was performed for articles that met inclusion criteria or when eligibility was unclear based on abstract review alone. Study selection and data extraction were performed by a single reviewer. For each included study, the following information was extracted: study design, population characteristics, definition of language proficiency, surgical specialty, sample size, primary outcomes, key findings, use of interpreter services, and the presence of language-concordant providers. Extracted data were organized into thematic categories, including preoperative communication and informed consent, interpreter utilization, postoperative outcomes, and access to care and delayed presentation.

Given the heterogeneity of study designs, surgical specialties, and outcome measures, a qualitative synthesis was performed rather than a quantitative meta-analysis. Findings were analyzed to identify recurring patterns, disparities, and areas of inconsistency across studies.

RESULTS

Thirty-four studies met criteria for inclusion in this review. The included studies consisted of 18 retrospective cohort studies, four systematic reviews, two prospective studies, and two cross-sectional studies. Eight studies fell into an “other” category that focused on patient experience through structured interviews rather than quantitative data. In terms of topics addressed in

each study, four discussed preoperative consent, 10 interpreter services, six access to care, five pain management, 12 postoperative outcomes, and four addressed follow-up care.

Access to Care and Delayed Presentation

Language barriers may influence surgical outcomes even before the perioperative period begins. Several studies suggest that patients with limited English proficiency experience barriers to accessing surgical evaluation, which may result in delayed presentation or more advanced disease at the time of treatment.⁹⁻¹¹ When LEP patients do present for care, literature suggests that they may be more likely to receive surgical intervention rather than conservative management.¹² This may suggest that patients present with more severe disease due to delay or there are fewer shared decision-making discussions between the care team and LEP patients. Much of the available data comes from transplant surgery, where LEP patients are less likely to receive a transplant and experience longer wait times between diagnosis and transplant.^{13,14}

LEP patients are also more likely to present for emergent surgery when compared to English-proficient populations.¹⁵ While in some surgical specialties delayed presentation does not appear to correlate with worse clinical outcomes, in the management of emergent surgical conditions delays in operative intervention are associated with increased morbidity and mortality in LEP patients.¹⁶ Conversely, pediatric studies demonstrate that English proficient (EP) patients are more likely to undergo elective surgical procedures. This suggests both barriers to access and differences in utilization patterns, as EP patients may be more likely to undergo procedures that are indicated but not strictly necessary, such as tympanostomy tube placement or tonsillectomy.¹⁷

These disparities may reflect challenges navigating the healthcare system, limited access to language-concordant resources, or decreased familiarity with referral pathways.¹⁸ Although the literature on access to surgical care among LEP populations remains limited, delayed presentation may partially contribute to differences in surgical outcomes observed in some studies.

Beyond differences in access to surgical care, disparities also persist in perioperative management and postoperative recovery.

Preoperative Communication and Informed Consent

Communication during the preoperative period is essential to ensure that patients understand procedural risks, available alternatives, and postoperative expectations. Within the literature reviewed, relatively few studies directly evaluated comprehension differences between LEP and English-proficient patients during the informed consent process. Instead, most studies focused on differences in the documentation of informed consent.

Across these studies, LEP patients were consistently more likely to have incomplete documentation of informed consent compared with English-proficient patients.¹⁹⁻²¹ In several reports, LEP patients were less likely to have a signed consent form present in the medical record. Even when documentation was present, fewer than half of patients received consent forms translated into their primary language.²¹ These findings suggest persistent structural barriers to ensuring equitable informed consent for patients with language barriers.

Multiple studies also described the use of ad hoc interpretation during the consent process. Family members, including bilingual minors, were frequently used as interpreters during consent discussions, despite hospital policies that typically prohibit this practice.^{19,20,22} Providers reported that these informal strategies were often used when professional interpreter services were delayed, particularly when wait times exceeded 15 minutes.^{20, 22} In some cases, surrogate decision makers signed consent forms despite no documented indication that the patient lacked decision-making capacity.^{19,20}

Another recurring theme was the use of clinicians' own language skills despite self-reported nonfluency in the language used. While some providers reported establishing personal ethical boundaries regarding when it was appropriate to use their own language abilities, this practice was inconsistent across institutions and specialties.²²

Collectively, these practices raise concerns regarding compromised patient autonomy and the adequacy of informed decision-making among LEP surgical patients. Because surgical procedures inherently involve significant risk, robust informed consent practices are particularly critical. Although emergent circumstances may occasionally limit the ability to delay surgery while awaiting professional interpreter services, the literature suggests a need for more standardized and accessible interpreter-supported consent processes across surgical subspecialties and languages.

Interpreter Services vs. Language Concordance

Professional interpreter services play an important role in mitigating language-related disparities in surgical care. Similar to inconsistencies observed during the preoperative informed consent process, interpreter services are not consistently documented across the perioperative continuum.^{19,20} It remains unclear whether this reflects inadequate utilization of interpreter services or poor documentation practices within the medical record.

Evidence suggests that appropriate interpreter use may improve several perioperative outcomes, including decreased hospital length of stay (LOS), improved postoperative pain management, and increased patient satisfaction. Patients with LEP who had documentation of frequent interpreter use

experienced significantly shorter LOS compared to patients who lacked documentation of interpreter services in their medical record.²³ These findings suggest that interpreter utilization may positively influence postoperative recovery. Lack of documentation may also reflect underutilization.

In addition to decreased LOS, increased interpreter use has been associated with improved pain control.²⁴ Much of the literature evaluating pain management among LEP patients focuses on pediatric populations, which may limit generalizability to adult surgical patients. However, studies demonstrate that improved access to interpreter services is associated with more frequent pain assessments and lower reported pain scores that are comparable to those observed in English-proficient patients.^{12,24}

Despite these benefits, interpreter services alone do not fully eliminate disparities. Variability in interpreter availability, clinician training, and institutional resources may limit the effectiveness of interpreter services in practice. Feedback from interpreters, providers, and families may therefore be critical in identifying opportunities to improve perioperative communication.

Qualitative studies have identified several actionable changes that could improve outcomes for LEP patients. Interpreters report that mechanisms allowing improved access to patient information prior to clinical encounters, verification of patient understanding, and clinician training in effective interpreter utilization would greatly strengthen the delivery of equitable perioperative care and better integrate interpreter services into surgical workflows.²⁵ Providers have also observed that LEP families may be less likely to ask questions compared to English-speaking families. Families also report awareness of the additional time required for interpretation and may withhold questions to avoid being burdensome.²⁶ Patients also report a lack of language-concordant educational resources available through hospitals or online platforms.^{18,26}

Several interventions have been proposed to improve interpreter utilization. Educational initiatives, electronic medical record reminders, and improved access to telephone interpretation have all been associated with increased interpreter use.²⁰ In fast-paced specialties such as surgery, time efficiency is critical to ensure adherence to interpretation standards. Involving professional interpreters in the development of language-concordant educational resources has also been shown to increase patient satisfaction.

For example, one hospital studied the feasibility of providing audio-recorded discharge instructions for LEP families. Families who received interpreter-supported discharge recordings reported significantly higher satisfaction scores compared to those who received standard instructions. However, there was no statistically significant difference in reported caregiver comfort in managing postoperative care at home.²⁷

Beyond the benefits associated with interpreter use, evidence suggests that language-concordant care may provide even greater improvements in patient understanding and satisfaction.²⁸ Hospitals that specifically focus on the care of Spanish-speaking populations have demonstrated improved outcomes for LEP patients compared to institutions without such programs.²⁹ Although some providers self-identify as bilingual, many are not certified bilingual providers, which in some institutions prevents them from providing language-concordant care.³⁰

Quality improvement initiatives have therefore focused on increasing certification among bilingual providers through assessments such as the Clinician Cultural and Linguistic Assessment. In one initiative, the proportion of certified surgical residents increased from 5% to 50% following targeted training and testing. Importantly, the program also revealed that approximately 20% of providers who self-identified as bilingual did not demonstrate sufficient language proficiency to pass the certification assessment.³⁰ Initiatives such as these may increase the number of qualified language-concordant providers while also identifying clinicians who may overestimate their medical language proficiency.

Postoperative Outcomes

While interpreter services and language-concordant care aim to reduce communication barriers, disparities in clinical outcomes among LEP patients remain an area of active investigation.

Postoperative outcomes are closely tied to effective communication between the surgical care team and patients. Although many studies suggest that language barriers negatively influence perioperative communication, findings regarding clinical outcomes remain somewhat mixed. Some investigations report higher complication rates and increased healthcare utilization among patients with limited English proficiency, while others have not observed statistically significant differences after controlling for demographic and clinical variables.^{10-12,15,19,29,31-33} These variations may reflect differences in surgical specialties, study design, and the availability of interpreter services across institutions.

Within orthopedic surgery, LEP status has been associated with increased risk of postoperative complications including deep vein thrombosis, venous thromboembolism, and pneumonia.³³ However, studies evaluating outcomes following knee arthroplasty report no difference in arthroplasty-specific complications, suggesting consistent intraoperative technique across language groups. In contrast, other specialties have documented outcome disparities. For example, neurosurgical studies have identified increased estimated blood loss, longer hospital length of stay, and higher overall cost among LEP

patients.^{32,33} Within this specialty, English proficiency has been established as an independent risk factor even after adjusting for preoperative comorbidities.³²

Evidence from trauma populations further highlights the potential impact of language barriers. Several studies demonstrate increased morbidity and mortality among LEP patients compared with EP patients. Interestingly, within the LEP population, Spanish-speaking patients demonstrate mortality rates comparable to EP patients, whereas patients speaking other non-English languages experience significantly higher mortality rates following trauma. These findings may reflect the relative availability of Spanish-language resources in U.S. healthcare systems, as Spanish is the most commonly spoken non-English language and institutional efforts have historically focused on expanding Spanish interpreter services.³¹ In trauma settings, language-concordant care therefore appears to be protective.

Pain is thought to be closely associated with postoperative outcomes. In orthopedic surgery inadequate pain control is hypothesized to delay ambulation, subsequently increasing the risk of vascular complications.³³ The literature consistently reports disparities in pain management among LEP populations. Non-English speaking patients are less likely to receive pain assessments as frequently and have a higher pain score before receiving opioids.^{12,24} Studies also demonstrate discrepancies between self-reported pain scores and nurse-reported pain assessments.¹² In addition, LEP patients have longer wait times until pain medication administration.^{12,34} Although many studies demonstrate that LEP patients are less likely to receive opioids and are often treated with lower doses in favor of non-opioid analgesics,³⁴ some found that LEP patients are more likely to receive opioids and at a higher dose than EP patients.³⁵

Discrepancies such as this may indicate differences across surgical specialties, settings, or pain assessment tools and warrant further investigation. Within the LEP groups, Asian and Latino populations are found to receive the lowest doses of opioid analgesics when compared to other non-English speaking patients.³⁶

Length of stay and readmission rate may be used as a proxy metric for quality of care and indicate inadequate treatment, poor discharge planning, or insufficient follow-up care. In studies that demonstrated significant differences in LOS, addressing language discordance reduced differences in LOS.²³ Additionally, LEP patients treated in a language-concordant institution have a lower rate of readmission compared to LEP patients in a language-discordant hospital.²⁹ Studies also find that LEP patients have a higher rate of urgent or emergent readmission compared to EP populations.¹¹ Literature also describes significantly higher healthcare costs for LEP patients (\$27,000 vs \$24,000).^{9,11}

Discrepancies do not end after successful treatment and discharge of surgical patients. Throughout the follow-up period, LEP patients have demonstrated a significant decrease in the use of telemedicine services and the patient portal.¹¹ Literature demonstrates mixed data in the rate of missed outpatient appointments in the LEP population vs. English-proficient patients.¹² A retrospective cohort study evaluating communication with the surgical team during the postoperative period found that 63% of English-speaking families sent at least one message vs. 20% of Spanish-speaking patients. In the same cohorts at their follow-up visits, 11 English-speaking patients, eight of which had sent a message in the portal, reported a concern. In the Spanish-speaking cohort, 15 patients had concerns and only three had previously sent a message to the care team.^{11,13} This study captures the availability or perceived availability of support that LEP populations experience during the follow-up period after operation.

Taken together, these findings suggest that while surgical technique and intraoperative care may be comparable across language groups, disparities in perioperative communication may influence downstream outcomes including complications, pain management, and healthcare utilization.

DISCUSSION

Systems-Level and Ethical Implications

Language barriers represent a potentially modifiable risk factor within surgical care. Unlike many clinical risk factors such as comorbid disease burden or age, language discordance is a system-level barrier that can be directly addressed through institutional policies, workforce training, and improved access to interpreter services. Healthcare institutions therefore bear a responsibility in mitigating language-related disparities. However, the ability to implement comprehensive language support varies across institutions depending on available resources. Federal regulations in the United States require healthcare systems to provide access for patients with limited English proficiency, yet adherence and implementation remain inconsistent across surgical settings.⁵ Hospitals should strive for standardization of interpreter credentials in order to address such inconsistencies. Plain-language principles have similarly been shown to improve comprehension of research-informed consent documents,³⁷ and similar simplification strategies should be considered for translated surgical materials. This approach may be especially valuable given the added cognitive burden LEP patients may face if navigating compounded language and health literacy barriers.

While professional interpreter services are an important component of language access, the role of language-concordant providers has gained increasing attention as a complementary strategy. Expanding the number of certified bilingual clinicians may improve communication efficiency while maintaining accuracy, particularly in time-sensitive surgical environments.

These findings also highlight important implications for surgical education. Medical schools provide limited formal training in the effective use of interpreter services or in providing language-concordant care. Incorporating structured language-certification programs and training in interpreter-mediated communication may help address this gap. Improving language access should be viewed not solely as an issue of cultural competency, but as a patient safety concern. Communication failures during the perioperative period may directly influence informed consent, postoperative recovery, and adherence to follow-up care.

Beyond interpreter services and language-concordant staffing, emerging technologies are also helping to bridge these access and training gaps. The rise of artificial intelligence (AI) creates new possibilities in regards to machine translation. Little evidence is currently available to evaluate the efficacy of such tools. However, some research suggests that the use of AI as an adjunct to professional translation is associated with improvement in the quality of translated materials. One study of the translation of pediatric discharge instructions found that the human-in-the-loop approach, which requires human oversight of AI translation, demonstrated comparable if not improved outcomes compared to professional translation alone. Another benefit was seen in the efficiency of using large language models. Across all languages human-in-the-loop translation averaged 7.1 minutes vs. professional translation taking 16.8 minutes to generate a single translated document. Despite this encouraging data, care needs to be taken given variability seen in studies surrounding the accuracy of translation of underrepresented languages that may have a smaller digital footprint for language models to use.³⁸

Although Spanish is the most commonly spoken non-English language in the United States and has therefore been the focus of many institutional language initiatives, disparities may be even more pronounced among patients speaking less-common languages where interpreter resources are more limited. Efforts to improve Spanish-language access may therefore serve as an important framework for identifying scalable strategies that improve patient-centered surgical outcomes across diverse populations.

Gaps in Literature

Current gaps and limitations in the literature include a heavy reliance on LEP as a broad category, conflation of educational attainment with English proficiency, a predominance of retrospective cohort studies conducted at single academic institutions, limited evaluation of language-concordant surgeons, and inconsistent methodologies for identifying patients as LEP during data collection. The use of LEP as a single group may obscure differences between linguistic communities, as language needs, cultural factors, and access to interpreter services vary significantly across populations. As a result, findings from aggregated LEP cohorts may fail to capture

disparities that disproportionately affect speakers of less-common languages. It must also be acknowledged that the studies included in this review largely treat Spanish-speaking patients as a monolithic linguistic group, without differentiating regional or national dialect variation. Because the underlying literature does not report this level of granularity, this review is similarly unable to assess whether outcomes differ across Spanish-speaking subgroups.

A related but distinct gap concerns educational attainment, which is frequently conflated with English proficiency but represents a separate confounder that can co-occur with LEP. Educational attainment has been independently associated with long-term functional outcomes in general orthopedic surgical populations, though categorized as college-or-less versus graduate/doctorate attainment rather than by finer gradations such as high school versus university.³⁹ However, none of the studies included in this review stratified LEP patients by educational attainment, making it unclear whether the disparities described here reflect language discordance alone or compounding effects. Future research should collect and report these variables alongside language proficiency to disentangle their relative contributions.

In addition, the majority of available studies rely on retrospective designs, which limits the ability to establish causal relationships. Many of these studies are conducted within large academic medical centers that often have more resources allocated for interpretation services, limiting the generalizability of findings to smaller, community-based surgical practices. Another important limitation is the relatively small body of literature evaluating the role of language-concordant surgeons. While interpreter services are frequently studied, fewer investigations assess whether direct communication between surgeons and patients in a shared language may improve perioperative outcomes. Finally, variability exists in how studies define and identify LEP patients, with some identifying patients based on the primary language listed in the medical record, which may not accurately reflect English proficiency. These inconsistencies make it difficult to compare findings across studies and may contribute to mixed results within the literature. Future research should prioritize prospective, multi-institutional studies with standardized definitions of language proficiency and more detailed evaluation of language-concordant surgical care.

CONCLUSION

Language barriers remain an important but modifiable contributor to disparities in surgical care for patients with limited English proficiency. Across the literature, communication challenges are evident throughout the perioperative continuum, including barriers to access, inconsistencies in preoperative informed consent documentation, variability in interpreter utilization, and differences in postoperative outcomes and follow-up communication. While interpreter services improve many aspects of

perioperative care, they do not fully eliminate disparities. Broader system-level approaches such as language-concordant care, improved clinician training, and institutional policies that prioritize culturally and linguistically competent communication are important in the pursuit of more equitable surgical care for patients with limited English proficiency.

The findings of this review suggest that language discordance should be considered not only a cultural or social issue, but also a clinical risk factor. Addressing communication barriers has the potential to improve informed decision-making, postoperative recovery, and overall patient satisfaction and trust in the healthcare system. Although Spanish-language resources have expanded in many healthcare systems, future research should continue to evaluate disparities across diverse linguistic communities and identify scalable interventions that improve communication across surgical settings. Ultimately, strengthening language access in surgical care represents an important opportunity to advance equity in patient-centered care and surgical outcomes.

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