

Healthcare Utilization After Pediatric Fracture Surgery: The Hidden Cost of Language Barriers

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INTRODUCTION:

Language barriers can complicate the delivery of postoperative care in pediatric populations. While prior studies have explored disparities in access and outcomes based on race or insurance status, limited attention has been paid to language as an independent factor. This study investigates postoperative outcomes in pediatric non-English speakers undergoing operative management for upper and lower extremity (UE and LE) fractures, with a focus on emergency department (ER) utilization, revision surgery, and hospital readmissions.

METHODS:

Data from the TriNetX US Collaborative Network were queried for patients ≤18 years old who underwent surgical treatment for LE (femur, tibia, fibula, ankle) or UE (shoulder, humerus, radius, ulna) fractures within one month of diagnosis between January 1, 2004 and January 1, 2024. Patients were categorized by primary language, including non-English languages such as Spanish, Hindi, Chinese, and others. Propensity score matching was performed 1:1 on age, sex, tobacco use, diabetes mellitus, asthma, and BMI percentile. Outcomes were assessed at 3 months and 12 months postoperatively.

RESULTS:

A total of 2,749 LE and 11,303 UE non-English-speaking patients were matched to English-speaking counterparts. At 12-month follow-up, non-English speakers demonstrated significantly higher ER utilization (LE: 18.6% vs. 14.3%, RR=1.3, p<0.01; UE: 18.9% vs. 14.1%, RR=1.3, p<0.01). Conversely, they exhibited lower rates of revision surgery (LE: 5.9% vs. 7.9%, RR=0.7, p<0.01; UE: 3.2% vs. 4.2%, RR=0.8, p<0.01) and hospital readmission (LE: 3.9% vs. 6.8%, RR=0.6, p<0.01; UE: 0.6% vs. 1.2%, RR=0.5, p<0.01).

DISCUSSION AND CONCLUSION: Non-English-speaking pediatric patients undergoing fracture surgery experience higher ER utilization, likely reflecting communication challenges with discharge instructions. Lower revision and readmission rates may be attributable to systemic barriers, including reliance on community-based care or delayed presentation. These findings underscore the need for improved linguistic and culturally appropriate discharge education to enhance outcomes and equity in pediatric orthopaedic care.

Characteristic	Non-English LE (N=2,749) (%)	English LE (N=2,749) (%)	P
Age at Index	2,749 (100.0%)	2,749 (100.0%)	0.98
Sex			
Male	1,743 (63.1%)	1,743 (63.1%)	0.93
Female	1,006 (36.9%)	1,006 (36.9%)	0.93
Race & Ethnicity			
Asian	2,563 (93.2%)	311 (11.3%)	<0.001
Hispanic or Latino	182 (6.6%)	311 (11.3%)	<0.001
Black or African American	24 (0.9%)	40 (1.5%)	<0.001
White	1,071 (39.0%)	1,808 (66.2%)	<0.001
Other Race	98 (3.6%)	82 (3.0%)	<0.001
Insurance			
Medicaid	10 (0.4%)	30 (1.1%)	1.00
Private/Other	1,739 (63.0%)	1,719 (62.6%)	0.85
Medicare	202 (7.4%)	199 (7.3%)	0.88
Body Mass Index			
BMI Percentile	76.5 (± 26.5)	71.1 (± 13.1)	0.19

Characteristic	Non-English UE (N=11,303) (%)	English UE (N=11,303) (%)	P
Age at Index	11,303 (100.0%)	11,303 (100.0%)	0.98
Sex			
Male	7,238 (64.0%)	7,240 (64.0%)	0.98
Female	4,065 (36.0%)	4,063 (36.0%)	0.98
Race & Ethnicity			
Asian	10,271 (90.4%)	1,524 (13.5%)	<0.001
Hispanic or Latino	208 (1.8%)	364 (3.2%)	<0.001
Black or African American	47 (0.4%)	1,209 (10.7%)	<0.001
White	2,091 (18.5%)	7,761 (68.6%)	<0.001
Other Race	2,284 (20.2%)	519 (4.6%)	<0.001
Insurance			
Medicaid	49 (0.4%)	90 (0.8%)	1.00
Private/Other	11,254 (99.6%)	11,213 (99.2%)	1.00
Medicare	77 (0.7%)	770 (6.8%)	1.00
Body Mass Index			
BMI Percentile	74.4 (± 30.3)	68.8 (± 30.2)	0.08

Outcome	Non-English LE (N=2,749)	English LE (N=2,749)	Prevalence	Risk Ratio	95% CI	P
ER Visit	511	395	18.6%	1.3	(1.2, 1.4)	<0.001
Emergency Office Follow-Up	259	249	9.4%	1.0	(0.9, 1.1)	<0.001
Revision Surgery	27	141	1.0%	0.6	(0.5, 0.7)	<0.001
Hospital Readmission	107	1,808	3.9%	0.6	(0.5, 0.7)	<0.001

Outcome	Non-English UE (N=11,303)	English UE (N=11,303)	Prevalence	Risk Ratio	95% CI	P
ER Visit	2,151	1,582	19.0%	1.3	(1.2, 1.4)	<0.001
Emergency Office Follow-Up	1,062	1,009	9.0%	1.0	(0.9, 1.0)	<0.001
Revision Surgery	362	1,808	3.2%	0.8	(0.7, 0.9)	<0.001
Hospital Readmission	69	1,209	1.1%	0.5	(0.4, 0.5)	<0.001