

Food and Water Insecurity Are Associated With Worse Pain and Mobility in Pre- and Post-TJA Patients

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INTRODUCTION: Food and water insecurity are underrecognized social risk factors that may influence recovery and long-term outcomes after total joint arthroplasty (TJA). Limited access to adequate nutrition and safe water can impair wound healing, mobility, medication adherence, and overall health. Yet, their relationship to patient-reported outcomes has not been well studied in orthopedic populations. We evaluated the association between food, nutrition, and water security and PROMIS Pain Interference and Mobility scores among TJA patients to determine how these social factors may contribute to functional recovery and quality of life.

METHODS: We conducted a prospective, mixed-methods study of TJA patients at Yale New Haven Health. All patients completed surveys incorporating novel questions about how joint pain and/or total joint arthroplasty impacted their ability to shop for food, prepare or cook meals, use transportation, and work or earn income. Validated screening tools were used to assess food and nutrition insecurity. These questions were incorporated in a comprehensive 10-minute survey administered verbally in English or Spanish. Chart review captures demographics, surgical variables, and outcomes; thematic analysis of qualitative responses and key stakeholder interviews is planned. To date, 539 patients have been enrolled, with 28.6% of chart reviews complete. Data collection will conclude by September 2025, and full analysis will be available at the presentation. PROMIS Pain Interference and Mobility scores were analyzed overall and stratified by preoperative versus postoperative status and by food, nutrition, and water security status. IRB approval was obtained.

RESULTS SECTION: Among 539 patients surveyed, 341 (63.3%) were female and 198 (36.7%) were male. A total of 289 patients (53.6%) completed the survey before undergoing TJA, while 250 patients (46.4%) had already undergone TJA. 70 patients (13%) screened positive for food insecurity, 121 (22.4%) for nutrition insecurity, and 39 (7.9%) for water insecurity. Overall, patients with food insecurity had significantly higher PROMIS Pain Interference scores (Mean 65.2 vs. 58, $p < .001$) and lower PROMIS Mobility scores (Mean 32.6 vs. 38.5, $p < .001$) compared with food-secure patients. Similar trends were observed for water insecurity (Pain Interference Mean 66 vs. 58.1, $p < .001$; Mobility Mean 33.4 vs. 38.5, $p < .001$). Preoperatively, food-insecure patients reported worse pain interference (65.7 vs 59.9, $p < .001$) and mobility (33.6 vs 37.9, $p < .001$), with these disparities persisting in the postoperative cohort. Nutrition and water insecurity showed similar trends, with insecure patients consistently beginning and remaining at worse pain and mobility states than secure patients (Table 1).

DISCUSSION: Food, nutrition, and water insecurity were associated with consistently higher pain and worse mobility in both preoperative and postoperative patients presenting to an arthroplasty clinic. These disparities suggest that unmet basic needs may blunt the functional improvements patients typically gain from surgery. Importantly, the persistence of worse outcomes postoperatively highlights that surgical intervention alone does not fully mitigate the impact of social risk factors. While chart review is ongoing, the early findings emphasize the need to integrate screening and support for food and water insecurity into orthopedic care pathways.

SIGNIFICANCE/CLINICAL RELEVANCE: This study introduces food, nutrition, and water insecurity as novel, underrecognized predictors of pain and mobility outcomes in arthroplasty patients. Addressing these social risk factors could enhance recovery, optimize functional gains, and reduce inequities in surgical outcomes. Screening for and intervening on basic needs may represent a critical opportunity to improve patient-centered care in orthopedics and inform future policy and resource allocation.

Table 1. Pre and Postoperative PROMIS Scores by Food, Nutrition, and Water Security Status					
	Measure	Timing	Secure	Insecure	P-value (Secure vs Insecure)
Food Security	PROMIS Pain Interference	Preoperative	59.9 (9)	65.7 (9)	<.001
		Postoperative	55.9 (9.8)	64.5 (9.6)	<.001
		(Post - Pre)	-4	-1.2	---
	PROMIS Mobility	Preoperative	37.9 (7.8)	33.6 (6.7)	<.001
		Postoperative	39.2 (7.2)	30.9 (7.5)	<.001
		(Post - Pre)	1.3	-2.7	---
Nutrition Security	PROMIS Pain Interference	Preoperative	59.6 (9.3)	63.7 (8.4)	<.001
		Postoperative	56.2 (10.2)	59.6 (9.6)	0.064
		(Post - Pre)	-3.4	-4.1	---
	PROMIS Mobility	Preoperative	37.8 (7.8)	35.8 (7.4)	0.046
		Postoperative	39 (7.6)	35.1 (7.1)	0.004
		(Post - Pre)	1.2	-0.7	---
Water Security	PROMIS Pain Interference	Preoperative	59.9 (9)	68.8 (8.8)	<.001
		Postoperative	56.1 (10.3)	62.6 (8.4)	0.012
		(Post - Pre)	-3.8	-6.2	---
	PROMIS Mobility	Preoperative	38.2 (7.6)	31.6 (5)	<.001
		Postoperative	38.8 (7.5)	35.6 (8.4)	0.097
		(Post - Pre)	0.6	4	---

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