PROMIS Scores and Their Correlation with the Extent of Plantar Fasciitis Treatment

Heidi Christine Ventresca, Jack Michael Ayres, Chase William Gauthier, Christopher James Toussaint, Tyler Gonzalez, James Benjamin Jackson

INTRODUCTION:

Plantar fasciitis, the most common cause of heel pain in adults, is typically able to be managed non-operatively, but in 20-30% of cases, it can become chronic and may require more invasive treatment modalities. The wide variability and lengthy duration of these treatments may negatively impact a patient's quality of life and workforce productivity, and this may additionally impact the healthcare system, economically. The Patient-Reported Outcomes Measurement Information System (PROMIS) has been demonstrated to be a useful tool for objectively assessing the functional impairment of patients with foot and ankle pathologies. This study sought to correlate patient's initial PROMIS scores with the extent and types of treatment required for their plantar fasciitis, to potentially help guide future treatment regimens.

METHODS:

A retrospective review was conducted on patients diagnosed with plantar fasciitis between March 2021 and January 2024. Exclusion criteria included prior foot or ankle surgery and being under 18 years of age. Demographics, treatments, PROMIS scores (pain interference, physical function, depression, mobility, global health-physical, global health-mental), and symptom duration were collected for each patient. Patients who received multiple forms of treatment were grouped and classified according to their most invasive treatment modality received. Continuous variables were summarized as means and standard deviations, and categorical variables as counts and percentages. Mann-Whitney U tests were performed for two-group comparisons and Kruskal-Wallis tests were performed for three-group comparisons; post-hoc pairwise comparisons were performed using Dunn's test with Bonferroni correction. P-values <0.05 were determined to be significant.

RESULTS:

The study included 372 patients diagnosed with plantar fasciitis between March 2021 and January 2024, with 273 receiving conservative treatment, 84 receiving injections, and 43 undergoing surgery. Patient demographics are summarized for each treatment cohort in Table 1. Analysis of outcome variables and treatment cohorts are summarized in Table 2. The conservative treatment group had significantly lower pain interference scores (p = 0.006) and higher physical function (p = 0.032) and mobility scores (p = 0.002) compared to the surgical group (Table 2). Additionally, the duration of symptoms was significantly shorter in the conservative group (p < 0.001) (Table 2).

DISCUSSION AND CONCLUSION:

These findings indicate that patients receiving conservative treatment for plantar fasciitis tend to have better PROMIS scores in pain interference, physical function, and mobility compared to those undergoing surgical intervention. Additionally, conservative treatment is associated with a shorter duration of symptoms. The results suggest that initial PROMIS scores can help guide treatment decisions and improve patient outcomes.

	Conservative	Injection	Surgery
Age (SD)	53 (14)	52 (13)	46 (11)
BMI (SD)	34 (8)	33 (8)	34 (7)
Symptom Duration (SD)	20 (23)	37 (39)	58 (51)
Gender			
Male (%)	99 (27)	39 (32)	8 (27)
Female (%)	273 (73)	84 (68)	43 (73)

Table 1. Demographic distribution across three treatment cohorts: conservative, injection, and surgery. Patients who received multiple forms of treatment are grouped according to their most invasive procedure.

	N	2-Group Cohort Analysis Mann-Whitney U test		3-Group Cohort Analysis Kruskal-Wallis test	Post-hoc Pairwise Comparisons Dunn's test w/ Bonferroni correction		
		Conservative vs Surgery +/- Injection	Surgery vs Conservative +/- Injection	Conservative vs Injection vs Surgery	Conservative-Surgery	Conservative-Injection	Injection-Surgery
		P-value	P-value	P-value	Adj. P-value	Adj. P-value	Adj. P-value
Age	546	**0.045**	**<.001**	**0.001**	**0.001**	1.000	**0.007**
BMI	448	0.277	0.351	0.147			
Symptom Duration	531	**<.001**	**<.001**	**<.001**	**0.000**	**0.000**	**0.038**
Pain Interference	542	**0.006**	0.134	**0.021**	0.182	0.058	1.000
Physical function	543	**0.032**	0.279	0.101			
Depression Score	505	0.128	0.970	0.248			
Mobility Score	533	**0.002**	0.069	**0.008**	0.080	**0.037**	1.000
Physical Global Health	505	0.985	0.999	1.000			
Mental Global Health	504	**0.044**	0.986	0.080			

Table 2. Analysis of scaled variables. P-values from the Mann-Whitney U test for two-group comparisons, Kruskal-Wallis test for three-group comparisons, and adjusted p-values from post-hoc pairwise comparisons using Dunn's test with Bonferroni correction. Statistically significant figures are bolded.