

## **Reliability of Proxy-Reported PROMIS Physical Function and Pain Interference to Measure Outcomes in Elderly Patients Following Musculoskeletal Injury**

*Maria Loreto Alvarez-Nebreda, MD, PhD<sup>1</sup>; Marilyn Heng, MD, MPh<sup>2</sup>; Bernard Rosner, PhD<sup>3</sup>; Michael F. McTague, MPH<sup>1</sup>; Houman Javedan, MD<sup>1</sup>; Mitchel B. Harris, MD<sup>1</sup>; Michael John Weaver, MD<sup>1</sup>*

<sup>1</sup>*Brigham & Women's Hospital, Boston, Massachusetts, USA*

<sup>2</sup>*Massachusetts General Hospital, Boston, Massachusetts, USA*

<sup>3</sup>*Harvard T.H. Chan School of Public Health, Boston, Massachusetts, USA*

**Purpose:** Patient Reported Outcomes Measurement Information System (PROMIS) instruments are useful to evaluate health status, but their use can be challenging for some vulnerable elderly patients, requiring aid from their proxies. The goal of this study is to compare elderly patients and their proxies' answers to PROMIS Physical Function and Pain Interference Computer Adaptive Test (PROMIS PF and PI CAT) for the evaluation of patients' outcomes following musculoskeletal injury. Additionally, we sought to correlate patients' reported PF with the Timed Up-and-Go test (TUG).

**Methods:** We performed a prospective cohort study of 273 ambulatory patients, aged 65 years or older, and their proxies, during their recovery following injury, at 2 Level I trauma centers. PROMIS PF and PI, TUG, and FRAIL scale were performed. The correlation of PROMIS scores between patients and proxies, and also with TUG score, was assessed using Spearman rank correlation. The Bland-Altman analysis was used to check agreement and bias. Subgroup comparison was tested using probit transformations.

**Results:** Patients' mean age was 75.7, SD 7.5 (62.2, SD 13.8 for proxies), 66.7% females, 57.1% married, and 34% with femoral fractures. There was a significant correlation and agreement of PROMIS PF and PI scores between patients and proxies (Spearman's rho for both PF and PI = 0.73), although proxies tended to overestimate the interference of pain on patient's performance (mean difference: -1.7,  $P < 0.001$ ). The correlation was significantly stronger in non-frail patients and in those with faster TUG scores. There was also a correlation between patients' PROMIS PF and TUG test (Spearman's rho = -0.58).

**Conclusion:** Proxies are good informants of the physical function of ambulatory elderly patients, as evaluated by the PROMIS PF instrument, following musculoskeletal injury, although they tend to slightly overestimate pain interference. The use of proxy-reported patient-reported outcomes might better characterize functional impairment and pain in a vulnerable patient population and could decrease selection bias in outcomes research.