Patient-Reported Outcomes Following Distal Femur Fracture Fixation: A Retrospective Cohort Study of 151 Patients

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INTRODUCTION: There has been a considerable research effort to guide surgeons in achieving better and more reliable healing outcomes following distal femur fracture treatment. However, much of this work has focused on clinical outcomes (e.g., nonunion and fracture-related infection), while studies addressing patient-reported mental and physical health remain limited. The objective was to evaluate 6-, 9-, and 12-month Patient-Reported Outcomes Measurement Information System (PROMIS) Physical Function (PF), Global Health Physical (GH-Physical), and Global Health Mental (GH-Mental) scores following operative treatment of distal femur fractures among patients who did not undergo reoperation for nonunion.

METHODS: All consecutive patients aged ≥18 years treated operatively for a distal femur fracture at two Level 1 Trauma Centers between 2006 and 2024 with ≥3 months follow-up and with ≥1 PROMIS score available between 3 and 12 months were included. Patients undergoing reoperation for nonunion were excluded. PROMIS scores were determined as estimated marginal means to account for repeated observations. Mixed-effects linear regression was performed to identify factors (e.g., patient, injury, and treatment characteristics, and PROMIS-GH-Mental scores) associated with PROMIS-PF.

RESULTS:

Overall, 151 patients (median age 69 years [range: 21-84 years]; 66% female) were included. PROMIS-PF scores were 34.8 at 6 months, 36.3 at 9 months, and 37.9 at 12 months ($p<0.001$). PROMIS-GH-Physical scores were 40.5, 40.9, and 41.3 ($p=0.35$), and PROMIS-GH-Mental scores were 46.0, 46.6, and 47.2 ($p=0.25$). In multivariable analysis, female sex (ß: -2.7, $p=0.011$) and assisted baseline ambulation (ß: -4.0, $p<0.001$) were associated with worse PROMIS-PF scores, whereas better PROMIS-GH-Mental scores at follow-up (1-unit increase ß: 0.35, $p<0.001$) and follow-up duration (1-month increase: ß: 0.34, $p=0.007$) were associated with better scores.

DISCUSSION AND CONCLUSION: Although PROMIS-PF scores after operative management of distal femur fractures improved over time, they remained considerably lower than the US reference population at 12 months (i.e. 38 vs. 50 points). PROMIS-GH-Physical and PROMIS-GH-Mental were more stable across timepoints. Better PROMIS-GH-Mental scores and longer follow-up duration were associated with better PROMIS-PF scores, whereas non-modifiable baseline patient characteristics (i.e., sex and baseline ambulation) were associated with worse scores. These findings suggest that physical function during recovery from distal femur fractures is more affected by baseline functioning and mental health than injury characteristics.