# Does Patient-Reported Outcome Measure Use at New Foot and Ankle Clinic Visits Improve Patient Satisfaction and Experience? A Randomized, Controlled Trial

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INTRODUCTION: The routine collection and use of patient-reported outcome measures (PROMs) across orthopaedic surgery, including in foot and ankle, continues to increase. PROMs allow patients a greater voice in their own care. While there are many perceived benefits of PROMs collection and use, there remains a paucity of research assessing how the use of PROMs may drive improved patient experience and well-being, as well as better guide surgeons in clinical decision-making. Such insights are vital as we continue to move towards a value-based health care system. This randomized, controlled trial study objectives: 1) Determine if the active use and discussion of PROMs during new patient visits are associated with patient satisfaction and experience2) Determine if the active use and discussion of PROMs during new patient clinic visits are associated with patient activation; and 3) To determine if the objectives (1) and (2) differ based on surgeon or sociodemographic factors.

METHODS:

This Institutional Review Board (IRB) approved randomized controlled trial was registered prior to data collection on ClinicalTrials.gov (*NCT04654910*). Between February 24, 2021 and April 11, 2022, new patients presenting to a single academic medical center foot and ankle clinic were approached for inclusion in the study. Patient-Reported Outcome Measurement Information System (PROMIS) Physical Function, Pain Interference, and Depression computerized adaptive tests (CATs) were completed as part of routine clinical care at our institution. Patients who agreed to participate were randomized to viewing and discussing PROMs results with the foot and ankle surgeon using a pre-set standard script or no viewing of PROMs data or discussion. At the conclusion of the clinic encounter, patients were asked to complete the CG-CAHPS and PAM questionnaires. These are validated measures of patient satisfaction and patient activation, respectively. The CG-CAHPS specific questions of interest focused on surgeon listening ability, surgeon respect, feeling of surgeon time taken during the encounter, and whether patients felt they understood what was discussed during the encounter. PAM scoring was assessed by both mean (out of 100 possible points) and by comparting proportions of patients who answered the PAM questions suggestive of poor activation (1 or 2) or high activation (3 or 4). Patient sociodemographic information was recorded, including ADI. Known cut-offs in the literature were used to group patients based on responding favorably to the CG-CAHPS questions or not, as well as whether patients were activated in taking care of their own health or not. Proportions (based on cut-offs in the literature) and scores were compared between the intervention and control groups overall and stratified for surgeon and sociodemographic factors. An a priori power analysis (80% power, Type 1 error rate of 5%) indicated 105 subjects in each study arm were needed; thus, with the assumption of missing or incomplete data, we sought to over sample by at least 20% (i.e., 260 total patients). Significance was set at $p<0.05$.

RESULTS: In total, 375 patients were enrolled and randomized over the study timeframe, with 130 in the intervention group and 145 in the control group. After accounting for those lost to follow-up or with missing data, 96 patients remained in the intervention cohort, and 117 patients in the control cohort. There was no difference in baseline patient characteristics between the two groups. Across the four CG-CAHPS questions, there was no difference in satisfaction between patients in the intervention versus control groups ($p>0.05$). There was no difference in PAM scores between the two groups (Intervention: 70.99 [SD: 15.35] vs. 72.38 [SD: 14.84], $p=0.50$). There continued to be no difference in PAM scores between the two groups when clustered by surgeon ($p>0.05$). Among patients whose ADI national percentile was below the 50$^{th}$ percentile, there was a similar percentage of subjects whose PAM score were either a 3 or 4 among intervention and control subjects (85.37% vs. 85.00%). However, among patients whose ADI national percentile was above the 50$^{th}$ percentile (i.e., patients with greater disadvantage), intervention subjects were less likely to have a PAM score of 3 or 4 compared to controls (85.45% vs. 94.74%).

DISCUSSION AND CONCLUSION:

The pivotal finding in this study suggests the most socially deprived patients in our sample who were randomized to viewing and discussing their PROMs results had lower patient activation. Important to add, this group still assessed their providers highly. In contrast, the group with a lower ADI (i.e., less disadvantaged) appeared to be more engaged by the review of this PROMS information at the time of the clinic visit. This may reflect the need for altered presentations of the data or specific training for health literacy or communication to better activate different patient groups.

**Table 1. Demographic Characteristics**

| | Control (n=117) | Intervention (n=96) | |
|---|---|---|---|
| | n (%) | n (%) | p-value |
| **Sex** | | | 0.709 |
| Male | 35 (29.91) | 31 (32.29) | |
| Female | 82 (70.09) | 65 (67.71) | |
| **Race** | | | 0.514 |
| White | 114 (97.44) | 92 (95.83) | |
| Other Race | 3 (2.56) | 4 (4.17) | |
| **Ethnicity** | | | 0.254 |
| Hispanic | 4 (3.42) | 1 (1.04) | |
| Non-Hispanic | 113 (96.58) | 95 (98.96) | |
| **Education Level** | | | 0.439 |
| College Degree or Higher | 71 (60.68) | 58 (60.42) | |
| Some College or Less | 46 (39.32) | 38 (39.58) | |
| **State Area Deprivation Index** | | | 0.968 |
| High Deprivation (8-10) | 71 (60.34) | 58 (60.82) | |
| Low Deprivation (≤ 7) | 46 (39.66) | 38 (39.18) | |
| **National Area Deprivation Index** | | | 0.2124 |
| High Deprivation | 57 (48.72) | 55 (57.29) | |
| Low Deprivation | 60 (51.28) | 41 (42.71) | |
| | **Mean (SD)** | **Mean (SD)** | |
| **Age** | 56.79 (13.85) | 55.83 (14.38) | 0.624 |
| **PROMIS Pain Interference** | 58.03 (6.92) | 57.70 (7.43) | 0.733 |
| **PROMIS Physical Function** | 43.27 (7.59) | 43.16 (7.82) | 0.912 |
| **PROMIS Depression** | 47.81 (8.57) | 47.82 (8.98) | 0.993 |

**Table 2. Primary Outcomes Patient Activation Measure and CGCAHPS**

| | Control (n=117) | Intervention (n=96) | |
|---|---|---|---|
| | n (%) | n (%) | p-value |
| **Patient Activation Measure** | | | 0.337 |
| 1 or 2 | 12 (10.26) | 14 (14.58) | |
| 3 or 4 | 105 (89.74) | 82 (85.42) | |
| | | | |
| **CG CAHPS** | | | |
| **Understand** | | | 0.077 |
| Top Box | 104 (88.89) | 77 (80.21) | |
| Below Top Box | 13 (11.11) | 19 (19.79) | |
| **Respect** | | | 0.346 |
| Top Box | 107 (91.45) | 84 (87.50) | |
| Below Top Box | 10 (8.55) | 12 (12.50) | |
| **Listen** | | | |
| Top Box | 100 (85.47) | 80 (83.33) | 0.668 |
| Below Top Box | 17 (14.53) | 16 (16.67) | |
| **Time** | | | 0.487 |
| Top Box | 97 (82.91) | 76 (79.17) | |
| Below Top Box | 20 (17.09) | 20 (20.83) | |
| **Provider** | | | 0.733 |
| Top Box | 107 (91.45) | 89 (92.71) | |
| Below Top Box | 10 (8.55) | 7 (7.29) | |

Additional Information for the text:

- Mean PAM Score was 72.38 (14.84) among the control group and 70.99 (15.35) among the intervention group; p=0.50)
- Among patients whose ADI national percentile was below the 50$^{th}$ percentile, there was a similar percentage of subjects whose PAM score was either a 3 or 4 among intervention and control subjects (85.37% vs. 85.0%). However, among patients whose ADI national percentile was above the 50$^{th}$ percentile, intervention subjects were less likely to have a PAM score of 3 or 4 compared to controls (85.45% vs. 94.74%).