Minimal Clinically Important Difference (MCID), Substantial Clinical Benefit (SCB), and Patient Acceptable Symptomatic State (PASS) of Upper Extremity PROMIS Scores in Adhesive Capsulitis

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INTRODUCTION: The purpose of this study is to calculate and determine what factors influence the Minimal Clinically Important Difference (MCID), Substantial Clinical Benefit (SCB), Patient Acceptable Symptom State (PASS) of Patient-Reported Outcomes Measurement Information System (PROMIS) Upper Extremity Computer Adaptive Testing v2.0 (UE), Pain Interference (P-Interference), and Pain Intensity (P-Intensity) in patients treated non-operatively for adhesive capsulitis.

METHODS: The anchor-based MCID, SCB, and PASS were calculated as the change in PROMIS scores representing the optimal cutoff for a ROC curve with an area under the curve analysis. Effect sizes and standardized response means (SRM) were calculated to assess the responsiveness of each PROM. Univariate and multivariate logistic regression analyses were performed to identify factors associated with achieving the MCID, SCB, and PASS.

RESULTS: This study enrolled 115 patients (117 shoulders). The anchor-based MCID for PROMIS UE, P-Interference, and P-Intensity was: 5.11, 4.16, and 8.16, respectively. The respective SCB was 8.44, 6.65, and 10.05. Effect size and SRM were: PROMIS UE (1.25, 1.01), P-Interference (1.29, 1.16), and P-Intensity (1.75, 1.51). Odds of achieving the UE MCID were lowered by higher flexion at initial consultation, male gender, and > 2 corticosteroid injections. Those with higher baseline P-Interference, anxiety, and Hispanic ethnicity were less likely to achieve the UE SCB. Odds of achieving MCID for PROMIS pain instruments were lowered by hyperlipidemia and those who were non-manual laborers. Diabetes, hispanic ethnicity, and non-manual laborers were less likely to achieve the SCB for pain.

DISCUSSION AND CONCLUSION: PROMIS scoring system predicts patient perception of improvement with respect to shoulder function and pain after treatment of adhesive capsulitis. Furthermore, the MCID, SCB, and PASS of PROMIS scores in patients with adhesive capsulitis can be utilized to objectively determine the clinical relevance of patient reported improvements.

Table 1	Value	Youden's Index (J)	Accuracy	Sensitivity	Specificity	AUC	Preoperative PROMIS Score	Postoperative PROMIS Score	Cohort #
UE MCID	5.11	38.53	0.79	0.76	1.00	0.89	33.42	46.61	103.00
UE SCB	8.44	42.91	0.75	0.70	0.84	0.87	34.47	49.76	74.00
UE PASS	8.47	42.77	0.71	0.66	0.81	0.82	34.30	48.61	80.00
P-Interference MCID	4.16	54.59	0.87	0.88	0.87	0.95	58.75	46.92	101.00
P-Interference SCB	6.65	51.37	0.77	0.78	0.77	0.91	58.02	45.13	81.00
P-Interference PASS	7.01	51.12	0.74	0.73	0.75	0.84	58.13	45.64	80.00
P-Intensity MCID	8.16	43.80	0.86	0.75	0.88	0.91	51.96	37.29	101.00
P-Intensity SCB	10.05	41.39	0.87	0.86	0.88	0.93	51.44	35.30	81.00
P-Intensity PASS	10.41	41.27	0.79	0.73	0.83	0.85	51.68	35.90	80.00