

Concurrent Validity of PROMIS and Legacy Hip PROMs Scores in Hip Preservation Surgery

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INTRODUCTION: Historically for hip procedures, the Hip Outcome Score (HOS) and the International Hip Outcome Tool 12 (iHOT-12) have been commonly utilized patient-reported outcome measures (PROMs) instruments. However, these tools are often influenced by other factors such as concurrent illnesses, making more standardized tools a preferable choice. PROMIS-25 is a standardized, validated PROMs metric that has correlated well with several other anatomy-specific PROMs tools. There is limited data on the correlation between PROMIS-25 and legacy hip PROMs in pediatric hip preservation patients and on the correlation differences between younger and older populations. In this study, we aim to assess and compare the correlations between iHOT-12 and HOS with PROMIS-25 in adult and pediatric hip preservation patients.

METHODS: This study included patients indicated for a hip preservation procedure at our institution. All patients completed the iHOT-12, HOS and PROMIS instruments through an electronic PRO platform prior to surgery. Spearman correlations were calculated separately for adult and pediatric patients between the various domains in each tool. A rho-to-z transformation analysis was conducted to assess whether there are differences in PROMs correlations between demographic factors.

RESULTS: A total of 62 patients were enrolled in this study from July 2020 to July 2023. The average age was 20.1 (SD: 6.7), and there were more pediatric patients (64.5%) than adult patients (35.4%). Multiple PROMIS domains, such as Functional Mobility, had strong or strong-moderate correlations with other hip PROMs in both pediatric (HOS ADL: $\rho=0.79$, $p<0.01$; HOS Sports: $\rho=0.88$, $p<0.01$; iHOT-12: $\rho=0.66$, $p<0.01$; Table 1) and adult (HOS ADL: $\rho=0.76$, $p<0.01$; HOS Sports: $\rho=0.84$, $p<0.01$; iHOT-12: $\rho=0.85$, $p<0.01$; Table 2) patients. There were significant effects of age and sex on correlations between PROMs ($p<0.05$).

DISCUSSION AND CONCLUSION: There are strong correlations between iHOT-12, HOS, and PROMIS domains designed to measure similar constructs in both age groups. However, certain demographic differences may significantly influence the correlation between iHOT-12/HOS and PROMIS. It is reasonable to collect only PROMIS scores for adult and pediatric hip preservation patients in order to minimize survey fatigue without compromising patient outcomes data.

Table 1. Pediatric Population Correlations

	HOS ADL	HOS Sports	iHOT-12
Strong Correlations (>0.7)			
PROMIS Pain Interference	(strong-moderate)	-0.74 (-0.01)	(strong-moderate)
PROMIS Functional Mobility	0.79 (<0.01)	0.88 (<0.01)	(strong-moderate)
Strong-Moderate Correlations (0.61 – 0.69)			
PROMIS Raw Pain	(moderate)	-0.65 (<0.01)	(moderate)
PROMIS Fatigue	-0.63 (<0.01)	-0.65 (<0.01)	(moderate)
PROMIS Pain Interference	-0.64 (<0.01)	(strong)	-0.67 (<0.01)
PROMIS Functional Mobility	(strong)	(strong)	0.60 (<0.01)
Moderate Correlations (0.40 – 0.60)			
PROMIS Raw Pain	-0.58 (<0.01)	(strong-moderate)	-0.55 (<0.01)
PROMIS Anxiety	(moderate-poor)	(poor)	-0.41 (<0.01)
PROMIS Depression	(moderate-poor)	(poor)	-0.42 (<0.01)
PROMIS Fatigue	(strong-moderate)	(strong-moderate)	-0.52 (<0.01)
PROMIS Peer Relationship	(moderate-poor)	(moderate-poor)	0.41 (<0.01)
Moderate-Poor Correlations (0.31 – 0.39)			
PROMIS Anxiety	-0.39 (-0.05)	(poor)	(moderate)
PROMIS Depression	-0.35 (-0.05)	(poor)	(moderate)
PROMIS Peer Relationship	0.31 (0.06)	(moderate)	(moderate)
Poor Correlations (<0.30)			
PROMIS Anxiety	(moderate-ate-poor)	-0.28 (0.17)	(moderate-ate-poor)
PROMIS Depression	(moderate-poor)	-0.30 (0.14)	(moderate)
PROMIS Peer Relationship	(moderate-poor)	(moderate)	0.13 (0.41)

Table 2. Adult Population Correlations

	HOS ADL	HOS Sports	iHOT-12
Strong Correlations (>0.7)			
PROMIS Raw Pain	-0.84 (<0.01)	-0.77 (<0.01)	-0.80 (<0.01)
PROMIS Anxiety	(moderate)	(strong-moderate)	-0.76 (<0.01)
PROMIS Pain Interference	0.83 (<0.01)	0.85 (<0.01)	0.92 (<0.01)
PROMIS Functional Mobility	0.76 (<0.01)	0.84 (<0.01)	0.85 (<0.01)
Strong-Moderate Correlations (0.61 – 0.69)			
PROMIS Anxiety	(moderate)	-0.66 (<0.01)	(strong)
PROMIS Fatigue	(moderate)	-0.68 (<0.01)	-0.68 (<0.01)
Moderate Correlations (0.40 – 0.60)			
PROMIS Anxiety	-0.60 (<0.01)	(strong-moderate)	(strong)
PROMIS Depression	(poor)	(moderate-poor)	-0.43 (0.04)
PROMIS Fatigue	-0.59 (<0.01)	(strong-moderate)	(strong-moderate)
PROMIS Peer Relationship	0.46 (0.04)	(poor)	(poor)
Moderate-Poor Correlations (0.31 – 0.39)			
PROMIS Depression	-0.33 (0.14)	-0.39 (0.16)	(moderate)
Poor Correlations (<0.30)			
PROMIS Peer Relationship	(moderate)	0.18 (0.51)	0.18 (0.41)