Can PROM Results from one Geographic Cultural Population be Applied to another Population? A Systematic Review and Meta-Analysis

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INTRODUCTION:
There is a paucity of literature evaluating whether PROM outcomes from one geographical or cultural region can be validly applied to another. This study assessed the heterogeneity of orthopedic PROMS across different cultural and geographical regions.
METHODS: Due to the relatively large amount of existing international literature with consistent outcome measures for adult distal radius fracture (OTA/AO 22) treatment, this injury was selected for a systematic review with meta-analysis. PubMed and EMBASE were queried for associated randomized controlled trials using volar locked plating and with PROMs collected after 6 months post-op. DASH/Quick-DASH, Pain Visual Analogue Scale (VAS), and Patient-Rated Wrist Evaluation (PRWE) outcome measures were collected. Study “cultural region” was classified by the United Nations Statistics Division’s geographic classification schema.
RESULTS:
Within 27 included studies, 33 treatment arms met inclusion criteria for DASH analysis, 20 for PRWE, and 10 for VAS (**Figure 1**).

Eight cultural regions were represented in the DASH analysis with significantly different effect sizes between groups ($Q_b(7)=25.47$, $p<0.01$). Significant DASH Score heterogeneity existed across all studies ($\tau^2=10.85$, $I^2=87.93\%$ $H^2=8.29$), and the overall test for heterogeneity was significant ($Q(32)=304.01$, $p<0.01$) (**Figure 2**). Six cultural regions were represented in the PRWE analysis with significantly different effect sizes between groups ($Q_b(5)=84.69$, $p<0.01$). Significant PRWE Score heterogeneity existed across all studies ($\tau^2=12.33$, $I^2=91.65\%$ $H^2=11.27$), and the overall test for heterogeneity was significant ($Q(19)=177.11$, $p<0.01$) (**Figure 3**). Five cultural regions were represented in the VAS analysis with significantly different effect sizes between groups ($Q_b(4)=34.11$, $p<0.01$). Significant VAS Score heterogeneity existed across all studies ($\tau^2=1.04$, $I^2=94.90\%$ $H^2=19.59$), and the overall test for heterogeneity was significant ($Q(9)=91.40$, $p<0.01$) (**Figure 4**).
DISCUSSION AND CONCLUSION: Significant differences in patient reported outcome measures were found following distal radius volar plate between cultural regions. This calls into question the validity of extrapolating published outcome data from one region to another. These differences should be considered when evaluating primary literature from a different region than one’s practice setting.

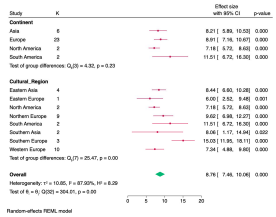

Figure 2: DASH Meta-Analysis Results

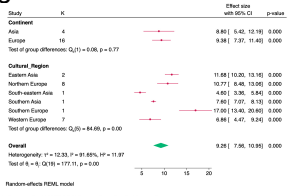

Figure 3: PRWE Meta-Analysis Results

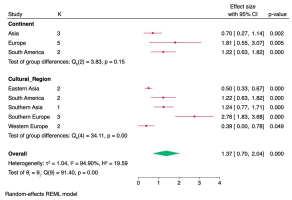

Figure 4: VAS Meta-Analysis Results