Correlation of the Single Assessment Numerical Evaluation to Legacy Patient-Reported Outcomes in Lumbar Fusion

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INTRODUCTION: Effective PROM collection, comparison, and usage is a highly relevant topic in orthopedic surgery, particularly regarding recent collection requirements. Maintaining compliance while minimizing patient survey burden is of utmost importance in both research and practice.

METHODS: A retrospective review of 146 lumbar fusion patients (46.6% male) at a single institution who completed the SANE score as well as legacy PROMs Patient-Reported Outcomes Measurement Information System (PROMIS-10) and Oswestry Disability Index (ODI) at preoperative as well as three, six, and twelve months postoperative was conducted. The PROMIS-10 was divided into two subcomponents: mental component score (MCS) and physical component score (PCS). Floor and ceiling rates, Spearman's correlation (ρ), minimal clinically important difference (MCID), and Bland-Altman plots were calculated and generated to assess the correlation between the SANE score and the legacy PROMs. $\chi 2$ tests and student's t-tests were used for categorical and continuous data, respectively. Confidence intervals for Bland-Altman plots were calculated with 95% confidence. P-values were considered significant if $P < .05$. This study was approved by the IRB committee.

RESULTS: All PROMs improved statistically from baseline at twelve months postoperative. The correlations with respect to the SANE score at twelve months postoperative were: PROMIS-10 PCS ($\rho=0.61$; Figure 1) and ODI ($\rho=-0.64$; Figure 2), PROMIS-10 MCS ($\rho=0.46$). No floor or ceiling effects were observed. The MCID pass rates were: PROMIS-10 PCS 62, PROMIS-10 MCS 38, SANE 64, and ODI 71%.

DISCUSSION: The SANE score was found to have a moderate correlation with the region-specific ODI as well as the holistic PROMIS-10 PCS postoperatively. Researchers and practices should consider the addition of the SANE score to spine PROM collections due to the questionnaire's ability to assess and describe pertinent patient information efficiently.

SIGNIFICANCE/CLINICAL RELEVANCE: Future practice may be better shaped by administration of the SANE score, allowing patients to express pertinent information and clinicians to assess functionality in a simplistic yet correlated manner.

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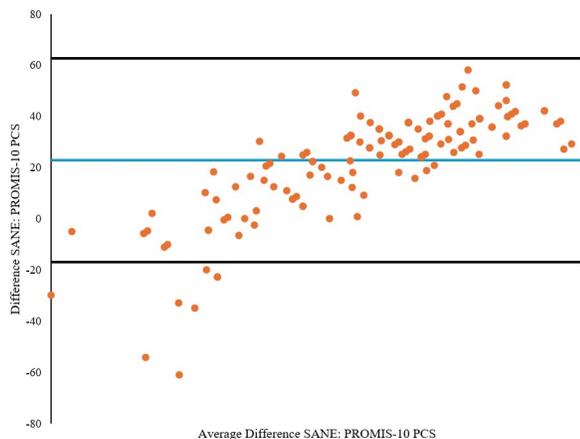
IMAGES:

Figure 1. Bland-Altman Plot Comparing the 12 Month Postoperative SANE and the PROMIS-10 PCS.
Blue line represents the mean difference line. Black lines indicate the upper and lower limits of agreement at 95% confidence. Data points outside of the upper and lower limits of agreement are outliers not in agreement.
Abbreviations: PCS=Physical Component Score; PROMIS=Patient-Reported Outcomes Measurement Information System; SANE=Single Assessment Numeric Evaluation.
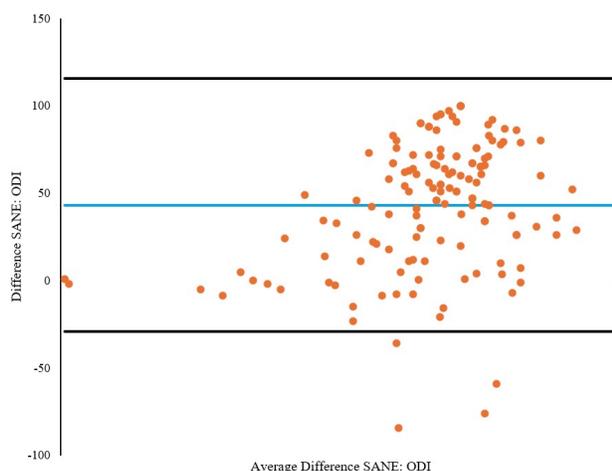

Figure 2. Bland-Altman Plot Comparing the 12 Month Postoperative SANE and the ODI.
Blue line represents the mean difference line. Black lines indicate the upper and lower limits of agreement at 95% confidence. Data points outside of the upper and lower limits of agreement are outliers not in agreement.
Abbreviations: ODI=Oswestry Disability Index; SANE=Single Assessment Numeric Evaluation.