

Changing values, changing outcomes:

The influence of reprioritization response shift on outcome assessment after spine surgery

Carolyn E. Schwartz, Sc.D.^{1,2}, Tolulope T. Sajobi, Ph.D.³, Lisa M. Lix, Ph.D.³,
Brian R. Quaranto, B.S.¹, Joel A. Finkelstein, MSc, MD, FRCS(C)⁴

Background: When patients experience a substantial health state change, they may undergo changes in the underlying meaning of their self-report to standardized outcome measures. These response shifts can reflect changes in the patient's internal standards, values or conceptualization of quality of life (QOL). We investigated the presence of changing values (reprioritization response shift) in a longitudinal cohort of spine surgery patients.

Methods: Spinal decompression surgery patients (mean age 52 years; 39% female, 36% working) provided Visual Analogue Scale (VAS) back and leg pain items, the Short Form-36 (SF-36v1), and the Oswestry Disability Index (ODI) data pre- and post-surgery ($n_{pre}=169$; $n_{6\text{ weeks}}=102$; $n_{3\text{ months}}=106$; $n_{6\text{ months}}=68$). Cured and No-Effect patient groups were compared using the VAS Minimally Important Difference (± 15 points) as a cut-off. Reprioritization response shift detection was based on change in the relative importance of the SF-36 domains for group discrimination *pre- and post-surgery*.

Results: The Cured group evidenced significant post-surgery differences from the No-Effect group on bodily pain, general health, physical functioning, social functioning, vitality, and the ODI. The relative importance analysis showed a differential effect with bodily pain and physical functioning becoming more important, and role physical becoming less important post-surgery in distinguishing the Cured group as compared to the No-Effect group ($p<0.05$). The Cured patients also evidenced stronger associations between bodily pain and physical functioning, vitality and general health ($p<0.05$). The No-Effect group evidenced increased inter-correlations of bodily pain with social functioning, mental health, and general health ($p<0.05$).

Conclusions: Patients who report clinically significant change in leg and back pain post-surgery using VAS pain scores are also distinguished by increased importance of bodily pain and physical functioning, and decreased importance of role physical. Bodily pain is primarily reflective of physical item response post-surgery among Cured patients, but reflects physical, social, and emotional item response among No-Effect patients. These changes in values may reflect a "moving goal post" in outcome assessment that complicates the interpretation of mean differences over time on standard spine outcome measures.