Significant explained variance in spine surgery outcomes by novel behavioral and attitudinal factors

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Summary: Similar proportions of variance were explained by standard demographic/medical and novel lifestyle and attitudinal factors. Spine outcome research should investigate such novel factors.

Introduction: Patient demographic and medical indicators influence the well-being of spine surgery patients. It may, however, be worthwhile to evaluate other lifestyle and attitudinal factors. We hypothesized that such novel factors would explain at least as much variance as standard covariates.

Methods: This cross-sectional observational study of patients (cervical n=80; lumbar n=228; scoliosis n=68) compared explained variance in quality-of-life (QOL) outcomes in standard versus novel factors. Standard factors included age, gender, body mass index, and comorbidities. Novel factors included lifestyle (exercise, commuting practices) and attitudinal factors (altruistic social interest behaviors). Outcome measures included the Oswestry Disability Index, Neck Disability Index, Rand-36, PROMIS Pain Impact, NRS Back and Leg Pain, Scoliosis Research Society-22r, and Global Health.

Univariate regressions estimated explained variance. Patient groups differed in most factors evaluated, so the regression analyses were computed separately by group. R^2 statistics were characterized as null, small (0.02), medium (0.15); and large (0.35) effect sizes (ES) (Cohen, 1992), and proportions were compared for the standard vs. novel factors by group.

Results: Most ES were small in magnitude across groups. Cervical patients had more medium and large ES than other patient groups (52% and 10% vs. 44% and 3% and 50% and 4% for lumbar and scoliosis patients, respectively). Similar proportions of variance were explained by standard and novel covariates, although lumbar patients tended to have more small ES by novel covariates than

Conclusions: Spine surgery outcome research should investigate lifestyle and attitudinal factors to enhance the personal and salutogenic relevance of the research. Time spent commuting, exercise practice, and altruistic practice appear to be relevant factors.