

22. Cost-Effectiveness of Psychologically Informed Physical Therapy in Patients after Lumbar Spine Surgery

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BACKGROUND CONTEXT: Evidence indicates that up to 40% of patients report persistent pain and disability following spine surgery. Psychosocial factors have been found to be important predictors of poor outcomes in patients undergoing surgery for degenerative conditions. Psychologically informed physical therapy (PIPT) programs have been found to be effective in patients with low back pain. Recent research has demonstrated the potential effectiveness of this treatment approach for patients at risk for poor outcomes following spine surgery. Economic evaluation of PIPT is critical in order to inform dissemination to clinical practice.

PURPOSE: The purpose of this study was to compare the cost-effectiveness of a 6-session telephone-based PIPT program with a 6-session telephone-based Education program using Markov decision-analysis. The PIPT treatment focused on cognitive and behavioral strategies of goal setting, graded activity, relaxation techniques, distraction, problem-solving, and cognitive restructuring (replacing negative thoughts with positive ones).

STUDY DESIGN/SETTING: Economic evaluation of a randomized controlled clinical trial conducted at an academic medical center (NCT01131611).

PATIENT SAMPLE: Eighty-six patients, 21 to 81 years of age, undergoing surgical treatment of a lumbar degenerative condition (spinal stenosis, spondylosis with or without myelopathy, and degenerative spondylolisthesis) using laminectomy with or without arthrodesis were randomized into either a PIPT intervention group (n=43) or an Education group about postoperative recovery (n=43).

OUTCOME MEASURES: Postoperative quality-adjusted life-years (QALYs) were calculated from a validated questionnaire (EQ-5D) that was completed by patients at 3-month and 1-year follow-up. Direct health care costs from hospital discharge to 1 year postop were derived from registry data and adjusted based on Medicare national-allowable payment amounts. Costs included outpatient visits to health care providers, diagnostic tests, devices, epidural steroid injections, emergency department visits, back-specific medications, and outpatient rehabilitation.

METHODS: A Markov state-transition model was constructed, based on data from a randomized clinical trial, and all parameters were varied individually in 1-way sensitivity analyses. Participants could be in one of three health states after spine surgery based on a change in the Oswestry Disability Index (ODI) score (better, not better, better then get worse). Initial placement and transitions between states were based on an improvement or worsening of the ODI score beyond the published minimal clinically important difference (MCID) of 12.8 points.

RESULTS: At 1 year after surgery, 89% were better, 2% were not better, and 8% were better than get worse in the PIPT group, while the Education group had 68% in the better, 8% in the not better, and 25% in the better than get worse health state. The total per person cost for the PIPT group was \$2,493 and for the Education group was \$2,595. The PIPT group cost \$102 less per person and gained 0.09 more QALYs compared with the Education group in base-case analysis, which indicated that PIPT was the dominant (less expensive, more effective) strategy. In sensitivity analyses, PIPT remained the favored strategy at a \$20,000/QALY threshold when all values were individually varied over plausible ranges.

CONCLUSIONS: Using Markov modeling, the PIPT program was less costly and more effective than an Education program when used after surgery for patients with degenerative lumbar spine conditions. Results support a biopsychosocial approach to postoperative spine management and the integration of cognitive-behavioral strategies into physical therapy care.

Telephone-based PIPT appears to be an economically reasonable, and perhaps cost saving, intervention.

FDA DEVICE/DRUG STATUS: This abstract does not discuss or include any applicable devices or drugs.

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23. Utility of Anxiety or Depression Domain of EQ-5D to Define Psychological Distress in Spine Surgery

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BACKGROUND CONTEXT: Psychological distress (anxiety and depression) has been shown to significantly impact the patient-reported outcomes (PROs), and therefore is an important variable that needs to be captured in large-scale registry efforts. However, for national or regional registries tracking tens of thousands of patients, an additional or nonessential patient metric could cost significant dollars of potential savings.

PURPOSE: The aim of our study was to determine if the anxiety or depression domain of EQ-5D could be used to define psychological distress in patients undergoing elective spine surgery.

STUDY DESIGN/SETTING: Analysis of prospective longitudinal registry based data.

PATIENT SAMPLE: Patients undergoing elective surgery for degenerative lumbar spine disease enrolled into a prospective spine registry were analyzed.

OUTCOME MEASURES: Validated questionnaire for general mental health [SF-12 mental component score (MCS)], for depression Zung depression scale (ZDS) score, for anxiety Modified Somatic Perception Questionnaire (MSPQ) and for quality of life EuroQoL-5D (EQ-5D) were captured.

METHODS: The psychological distress was defined based on the anxiety or depression domain of EQ-5D. The responses to this domain were captured as: 1) not anxious or depressed, 2) moderately anxious or depressed, 3) extremely anxious or depressed. Univariate proportional odds logistic regression analyses were conducted to evaluate the agreement between psychological distress based on EQ-5D and general mental health (SF-12 MCS), depression (ZDS) or anxiety (MSPQ).

RESULTS: A total of 2470 patients undergoing elective spine surgery were included in the analysis. About 44.9% (n=1109) of patients reported no anxiety or depression, 47.3% (n=1168) of patients reported moderate anxiety or depression and 7.8% (n=193) of patients reported extreme anxiety or depression on EQ-5D. In separate univariate proportional odds logistic regression models for psychological distress on EQ-5D, the psychological distress on EQ-5D was significantly correlated with SF-12 MCS score (p<.0001, C-index=0.831), ZDS score (p<.0001, C-index=0.802) and MSPQ score (p<.0001, C-index=0.711).

CONCLUSIONS: The anxiety or depression domain of EQ-5D can be used to determine psychological distress as accurately as other validated commonly used mental health questionnaire. Spine registries can utilize this information to limit the number of validated PROs administered at each time point and at the same time accurately capture psychological distress.

FDA DEVICE/DRUG STATUS: This abstract does not discuss or include any applicable devices or drugs.

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