

**Title:** Explanatory Multivariate Modeling for Disability, Pain, and Costs in Patients with Spine Pain

**Abstract Body:**

**Study Design:** A retrospective cohort study at a single outpatient physical therapy clinic.

**Purpose/Hypotheses:** Many prognostic low back pain studies have been performed using a variety prognostic factors and outcome measures, many of which are in the primary care setting. There is a dearth of literature on prognostic factors that consider direct access physical therapy and costs. The objective of this study is to investigate and identify clinically important prognostic factors that predict disability using the Oswestry Disability Index (ODI) and costs to develop a clinical prediction rule (CPR) for low back pain patients using direct access physical therapy.

**Number of Subjects:** 250

**Methods:** 250 participants were evaluated in a retrospective cohort study at a single outpatient physical therapy clinic using prognostic variables, the Oswestry Disability Index (ODI), and insurance claims. Treatment outcome was measured using groupings of high (> 10), low (4-10), or did not meet (< 4) minimal clinically important difference (MCID) scores on the ODI. Insurance claims for each patient were also trichotomized into a low, middle, or high tertile based on third party insurance claims. Prognostic variables taken from baseline patient information were analyzed. Bivariate multinomial logistic regression analyses were performed to establish significance for prognostic factors. These select factors were used in hierarchical multinomial logistic regression models to determine effects on disability and claims.

**Results:** All 250 participants were included for analysis. The prognostic factors statistically significant for meeting the high and low MCID were female gender and baseline ODI score. The prognostic factors that did not meet middle costs or high costs were imaging and an active approach to treatment.

**Conclusion:** Gender and patients with higher initial disability may predict how patients respond to physical therapy treatment. Patients who receive imaging and passive treatments are more likely to incur health care greater costs than those who do not. Future prognostic low back pain research should continue to examine the effect of prognostic factors on disability and health care costs.

**Clinical Relevance:** The novel introduction of costs into the prognostic modeling reveals support for the current advice that imaging is unnecessary in terms of reducing costs for the patient. This research supports more active than passive interventions for patients with low back pain, in terms of cost savings. Additionally, the inclusion of costs in this research can serve as models or inspiration for future researchers to continue to examine factors that influence the cost of treating low back pain.