Assessing Patient Reported Outcomes Measures via Phone Interviews Versus Patient Self-Survey in the Clinic: Are We Measuring the Same Thing?

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■ BACKGROUND: **Longitudinally following patients requires a full-time employee (FTE)-dependent data inflow infrastructure. There are efforts to capture patient-reported outcomes (PROs) by the use of non–FTE-dependent methodologies. In this study, we set out to assess the reliability of PRO data captured via FTE-dependent compared with non–FTE-dependent methodologies.**

■ METHODS: **A total of 119 adult patients (65 men) who underwent 1-and 2-level lumbar fusions at Duke University Medical Center were enrolled in this prospective study. Enrollment criteria included available demographic, clinical, and PRO data. All patients completed 2 sets of questionnaires—the first a phone interviews and the second a self-survey. There was at least a 2-week period between the phone interviews and self-survey. Questionnaires included the Oswestry Disability Index (ODI), the visual analog scale for back pain (VAS-BP), and the visual analog scale for leg pain (VAS-LP). Repeated-measures analysis of variance was used to compare the reliability of baseline PRO data captured.**

■ RESULTS: **A total of 39.49% of patients were smokers, 21.00% had diabetes, and 11.76% had coronary artery disease; 26.89% reported history of anxiety disorder, and 28.57% reported history of depression. A total of 97.47% of patients had a high-school diploma or General Education Development, and 49.57% attained a 4-year college degree or postgraduate degree. We observed a high correlation between baseline PRO data captured between FTE-dependent versus non–FTE dependent methodologies (ODI: $r = -0.89$, VAS-BP: $r = 0.74$, VAS-LP: $r = 0.70$). There was no difference in PROs of baseline pain and functional disability between FTE-dependent and non–FTE-dependent methodologies: baseline ODI (FTE-dependent: 47.73 ± 16.77 [mean ± SD] vs. non–FTE-dependent: 45.81 ± 12.11, $P = 0.39$), VAS-LP (FTE-dependent: 6.13 ± 2.78 vs. non–FTE-dependent: 6.46 ± 2.79, $P = 0.36$) and VAS-BP (FTE-dependent: 6.33 ± 2.90 vs. non–FTE-dependent: 6.53 ± 2.48, $P = 0.57$).**

■ CONCLUSION: **Our study suggests that there is great reliability between PRO data captured between FTE-dependent and non–FTE-dependent methodologies.**

INTRODUCTION

The effectiveness of most spine surgical interventions is best measured subjectively as improvements in symptoms and functionality and not objectively by radiographic imaging or length of hospital stay.[1] Patient-reported outcomes (PROs), such as disability and health-related quality of life, provide a subjective evaluation and serve as the mainstay clinical outcome measurement for many postsurgical interventions.[1,2] Furthermore, health care reform yielded the establishment of the Patient-Centered Outcomes Research Institute, making PROs

Key words
- Clinic surveys
- FTE-dependent
- Non-FTE dependent
- Oswestry Disability Index
- Patient-reported outcomes
- Phone interviews
- PROs
- Visual analog score

Abbreviations and Acronyms
FTE: Full-time employee
ODI: Oswestry Disability Index
PRO: Patient-reported outcome
SD: Standard deviation
VAS: Visual analog scale
VAS-BP: Visual analog scale for back pain
VAS-LP: Visual analog scale for leg pain

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integral both in national health care policies and within hospital settings.[2,3]

PROs have become an essential and central component for surgical effectiveness in spine care. With increasing pressure to report PROs for research and clinical purposes, hospitals and clinics have relied on full-time employee (FTE)-dependent data inflow infrastructure, which can be costly. There are efforts, however, to implement more cost-effective methods in collecting PROs in nonsurgical fields. In a proof-of-concept study done in the United Kingdom with 636 participants, Ashley et al.[4] created an integrated Electronic Patient-Reported Outcomes from Cancer Survivors system and found that through e-mail reminders they were able to link 100% of PROs with registry data. Thus, it is possible to create more efficient and cost-effective ways to collect and manage PROs.

Whether patients report their functional status differently when assessed via FTE-dependent methodologies (i.e., phone interviews) compared with non–FTE-dependent methodologies (i.e., e-mail and clinic surveys), however, still remains relatively unknown in spine research. The aim of this study is to compare the reliability of PRO data captured with the use of FTE-dependent and non–FTE-dependent methodologies.

MATERIALS AND METHODS

Patient Selection

We enrolled patients who underwent surgery and follow-up at Duke University Medical Center for this prospective study. Duke University Health System Institutional Review Board approval was obtained before initiation of the study. Enrollment criteria included patients aged 18 years and older 1) with available demographics data; 2) who underwent 1- or 2-level lumbar fusions; 3) and who completed baseline PRO measures, including the Oswestry Disability Index (ODI), the visual analog scale for back pain (VAS-BP), and the visual analog scale for leg pain (VAS-LP). We excluded patients with medical conditions that limited their ability to hear and to respond to phone interviews or to read and to complete hardcopy questionnaires.

Patient-Reported Outcomes

Questionnaires were administered to all patients via 1) phone interview (FTE-dependent) and 2) hardcopy in clinic (patient self-survey, non–FTE-dependent) with at least 2 weeks in between the phone interview and self-survey at clinic. Back pain was assessed by use of the VAS-BP questionnaire, whereas leg pain was assessed with the VAS-LP questionnaire.[5,6] Functional status was assessed with the ODI questionnaire.[7] These questionnaires have been validated, widely used, and are accepted in spine research.[8]

Statistical Analysis

Demographic data, including age, sex, education level, and medical and psychiatric comorbidities (diabetes, coronary artery disease, osteoporosis, anxiety disorder, and depression) are presented in Table 1. We compared patient-reported pain measures and functional status between FTE-dependent and non–FTE-dependent patient-reported methodologies. These parametric data were expressed as means ± standard deviation (SD) and compared via the Student t test. All tests were 2 sided and were considered statistically significant if the *P*-value was less than 0.05. Correlation of the PROs (ODI, VAS-BP, and VAS-LP) by the different methodologies was assessed with analysis of variance.

Table 1. Baseline Demographic Characteristics

	Patients (n = 119)
Mean age, years	60.22 ± 14.41
Male, %	57.52
Smoker, %	39.49
Diabetes, %	21.00
CAD, %	11.76
Osteoporosis, %	10.90
Anxiety disorder, %	26.89
Depression, %	28.57
Level of education	
Less than high school, %	2.52
High school, %	35.29
2-Year college, %	13.44
4-Year college, %	26.89
Postgraduate, %	22.68
Employment	
Full-time employment	29.94%
Disability	14.28%

Data are expressed as mean ± standard deviation or %.
CAD, coronary artery disease.

RESULTS

Patient Demographics

A total of 119 patients were enrolled in this study. Baseline patient characteristics and education level are illustrated in Table 1. The average age of the cohort was 60.22 ± 14.41 years, and 57.52% were men. In terms of medical and psychiatric comorbidities, 39.49% of patients were smokers, 21% had diabetes, and 11.76% had coronary artery disease; 26.89% had history of anxiety disorder, and 28.57% had a history of depression. The vast majority of patients (97.47%) had a high school diploma or General Education Development; 49.57% had attained a 4-year college degree or post-graduate degree (Table 1). A total of 29.94% reported full-time employment, and 14.28% were on disability (Table 1).

Correlation of PRO Measures

There was no statistically significant difference in patients' reporting of baseline pain and functional disability between FTE-dependent and non–FTE-dependent methodologies. The mean ± SD VAS-BP score of FTE-dependent and non–FTE-dependent was 6.33 ± 2.90 and 6.53 ± 2.48, $P = 0.57$, respectively (Table 2). The mean ± SD VAS-LP score of FTE-dependent and