

## ORIGINAL ARTICLE

## A descriptive analysis of clinical application of patient-reported outcome measures and screening tools for low back pain patients in US chiropractic teaching institutions

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**Objective:** To describe the clinical use of patient-reported outcome measures (PROMs) and screening tools (STs) for low back pain (LBP) in clinics of chiropractic teaching institutions in the United States.

**Methods:** A descriptive analysis was completed with data collection achieved between June 2018 and March 2019. PROMs/STs were classified as disability/functional measures, pain measures, psychosocial measures, and other measures. Frequencies of use of PROM/ST instruments were calculated.

**Results:** Representatives from 18 of 19 chiropractic institutions (94.75%) provided a description of PROM/ST use for LBP in their teaching clinics. Seventeen institutions (94.4%) reported the routine clinical use of PROMs/STs for LBP. Disability/functional measures were the most common type of instruments used, followed by pain measures, psychosocial measures, and others. The 4 most common individual PROMs/STs reported were (1) Oswestry Disability Index, (2) a variation of a pain rating scale, (3) Keele STarT Back Tool, and (4) Patient Specific Functional Scale. Six out of 18 (33%) institutions reported the use of a PROM/ST specifically designed to focus on psychosocial influences.

**Conclusion:** Most chiropractic institution teaching clinics in the United States reported the clinical use of PROMs/STs for patients presenting with LBP. This mirrors trends in chiropractic literature of increasing use of PROMs/STs. A minority of institutions described the clinical use of a PROM/ST specifically designed to detect psychosocial influences.

**Key Indexing Terms:** Chiropractic; Education; Patient-Reported Outcome Measures; Low Back Pain

J Chiropr Educ 2020;00(0):000–000 DOI 10.7899/JCE-19-12

### INTRODUCTION

Low back pain (LBP) is an increasingly common and challenging global issue.<sup>1,2</sup> The point prevalence of physically altering LBP has been estimated at approximately 540 million, or 7.3% of individuals worldwide.<sup>2</sup> Spine-related disorders, primarily LBP, are the leading causes of disability.<sup>3</sup> The influence of LBP is widespread, affecting high-income, middle-income, and low-income countries.<sup>2,3</sup> The presence and impact of disabling LBP in the United States is pervasive. Chronic LBP in the United States has been estimated at 10% of the population, with a total cost association topping \$200 billion annually.<sup>4</sup> Several nonpharmacologic approaches are supported by evidence-based guidelines as treatment options for acute and chronic LBP.<sup>5</sup> Many of these approaches are provided by doctors of chiropractic (DCs).<sup>6</sup>

A multitude of factors have been implicated as potential contributors to the development of persistent, disabling LBP, including biophysical, psychological, social, genetic, and comorbid factors.<sup>2</sup> As scientific research strengthens

the argument for a paradigm shift from the biomedical model toward the biopsychosocial (BPS) model, particularly in the management of pain, it is now generally accepted that illness and health are the result of an interaction between biological, psychological, and social factors.<sup>7</sup> To aid in shared clinical decision making, quality assurance in health care, and potential stratification for best clinical care pathways, it is reasonable for clinicians to incorporate validated patient-reported outcome measures (PROMs) and/or screening tools (STs).<sup>8,9</sup> Administering these tools may help facilitate communication regarding issues that are important to the patient and reflect all domains of health encompassed in the BPS model.<sup>10</sup>

LBP-related PROMs may be particularly beneficial in identifying patients' self-reported pain levels, physical capacity, and disability, and for monitoring clinical progress during a course of treatment.<sup>8,11</sup> LBP-related STs provide useful information in identifying subpopulations of patients susceptible to the development of chronic, disabling back pain and/or to stratify patients into evidence-based treatment plans.<sup>12</sup> For the purpose of this

study, STs help identify risk and prognosis and are generally given once in the acute phase of care, while PROMs assess for disability and may be recorded periodically throughout a patient's clinical course.

Chiropractic education has been shown to have a clear impact on the practice characteristics of licensed DCs.<sup>13</sup> It is reasonable to assume that chiropractic teaching institutions' clinical use of PROMs and STs may affect the behavior of prospective chiropractic graduates' clinical practice patterns in this area of patient management. The purpose of this descriptive analysis was to obtain the current clinical use of PROMs and STs for LBP within US chiropractic teaching institution clinics.

## METHODS

### Study Design

We conducted a descriptive analysis of the use of PROMs/STs for LBP in chiropractic institutions' teaching clinics in the United States ( $n = 19$ ). The Parker University institutional review board (IRB) for the protection of human subjects in research approved this study (Protocol no.: A-00178). Eligibility criteria included United States-based chiropractic institutions with accreditation from the Council on Chiropractic Education.<sup>14</sup> We included chiropractic institutions with multiple geographic campuses, and for purposes of this study accounted for each campus as a separate institution. Specifically, we sought the use of PROMs/STs at chiropractic teaching institution clinics and not at ancillary clinics, which may have an affiliation but are not owned by the chiropractic institution or available to all students (ie, Veterans Affairs clinics, private practitioner clinics with chiropractic student interns, volunteer clinics, specialty clinics). For data collection purposes, PROMs and STs were defined as instruments administered to LBP patients that were implemented and evaluated by faculty and/or chiropractic students. PROMs/STs excluded third-party mandated measures that were conducted on behalf of health insurance organizations.

### Data Collection

We contacted a designated representative at each institution who oversaw the institution's teaching clinics or who was knowledgeable regarding PROM/ST use at the institution. Through a semistructured qualitative interview format, we described the study design, the voluntary nature of this study, and after obtaining consent via e-mail, asked the designated representative to share the LBP instrument(s) being used for patients with LBP and the frequency/timing of these instruments. The script is available from the authors. The IRB protocol and approval were also voluntarily shared with representatives at each institution if requested. Data were provided to the investigators via e-mail and/or phone. Data collection was completed between June 2018 and March 2019.

### Data Analysis

Data were collected and transcribed to a Microsoft Excel ver. 1808 (Microsoft Corp, Redmond, WA) file.

Descriptive statistics for PROMs/STs specific instruments and use at each chiropractic institution were computed. Frequencies of use of individual PROM/ST instruments were also calculated.

## RESULTS

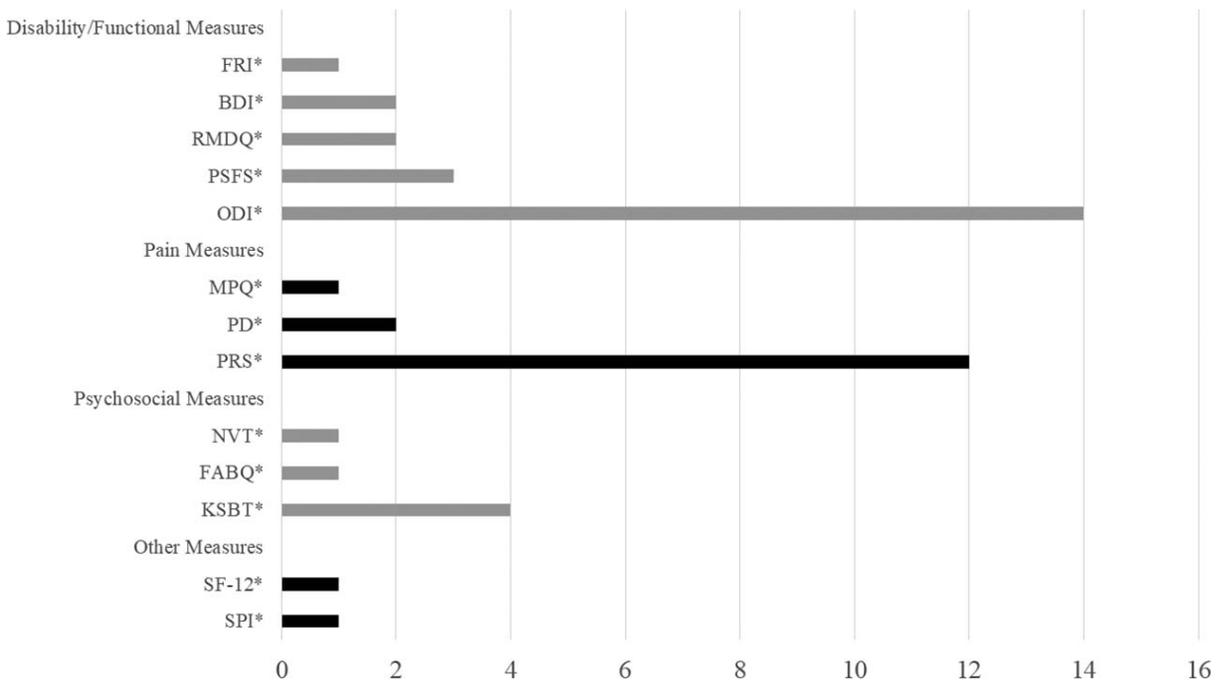
Representatives from a total of 18 eligible chiropractic institutions (94.7%) provided a description of PROMs/STs use in their teaching clinics. A total of 17 of the 18 (94.4%) participating institutions reported routine clinical use of PROMs/STs. We categorized the reported PROMs/STs into 4 measurement groups: disability/functional, pain, psychosocial, and others. As illustrated in Figure 1, a total of 13 different PROM/ST instruments were reported. Based on our categorization, disability/functional measures were the most common type of measure used ( $n = 22$ ), as some institutions used more than 1 disability measure. These included Bournemouth Disability Index (BDI),<sup>15</sup> Functional Rating Index (FRI),<sup>16</sup> Roland Morris Disability Questionnaire (RMDQ),<sup>17</sup> Patient Specific Functional Scale (PSFS),<sup>18</sup> and Oswestry Low Back Pain Disability Index or Revised Oswestry (ODI).<sup>19</sup> Pain measures were the second most commonly used measures reported ( $n = 15$ ). These included McGill Pain Questionnaire (MPQ),<sup>20</sup> Pain Diagram (PD),<sup>21</sup> and Pain Rating Scale (PRS).<sup>22</sup> Psychosocial measures ( $n = 6$ ), and other measures ( $n = 2$ ) were the least reported types of used measures. These included a nonvalidated tool for confidence, depression, passive coping, self-efficacy (NVT), Fear-Avoidance Beliefs Questionnaire (FABQ),<sup>23</sup> and Keele STarT Back Tool (KSBT).<sup>24</sup> Other measures ( $n = 2$ ) included the Short Form-12 Item Questionnaire (SF-12)<sup>25</sup> and Self-Perceived Improvement (SPI).

The KSBT was the only validated ST described to be used by 4 US chiropractic teaching institutions.<sup>24</sup> Although the KSBT has been validated for use only at initial presentation for acute LBP,<sup>26</sup> all 4 institutions claiming its use did so appropriately, but 3 also used it at reexamination or at end of care.

All institutions administered PROMs ( $n = 12$  instruments) during a new patient examination or at visit 1. Follow-up occurred at all reporting institutions at evaluations on either week 2, week 4, every 30–120 days, or at a reexamination visit.

## DISCUSSION

The use of PROMs/STs in chiropractic literature is increasing.<sup>8</sup> Clohesy et al<sup>8</sup> conducted a systematic review and found that along with self-created PROMs tailored to the desired outcome, the 4 most common standardized PROMs appearing in chiropractic literature are (1) ODI, (2) RMDQ, (3) Numerical Rating Scales, and (4) Visual Analogue Scales.<sup>7</sup> Our study revealed some similarities, including that the 4 most commonly reported PROMs/STs were (1) ODI, (2) a variation of PRS, (3) KSBT, and (4) PSFS. Our study also identified 1 institution using a nonvalidated tool to assess for confidence, depression, passive coping, and self-efficacy.



**Figure 1** - The number of chiropractic teaching institution clinics reporting use of PROMs/STs: BDI,<sup>15</sup> FABQ,<sup>23</sup> FRI,<sup>16</sup> KSBT,<sup>24</sup> MPQ,<sup>20</sup> NVT, ODI,<sup>19</sup> PD,<sup>21</sup> PRS,<sup>22</sup> PSFS,<sup>18</sup> RMDQ,<sup>17</sup> SF-12,<sup>25</sup> SPI.

Although the outcomes of PROM/ST use in clinical practice in the treatment of pain is not fully known, it appears they may impact clinical practice in multiple domains.<sup>11</sup> The use of PROMs/STs in health profession education is likely an important component in developing skills for understanding the importance of objectively measuring clinical change for healthcare students, as well as supporting communication between patient and clinician.<sup>27</sup> Furthermore, we suggest that an increased aptitude in the diverse range of PROMs/STs used in clinical practice could potentially bolster a student's awareness of social determinants of health and empower them to initiate more patient-centered conversations within the student-faculty clinic environment.<sup>28</sup>

Though multiple PROM/ST instruments contain some questions that may touch on psychosocial determinants, our study revealed only 6 out of 18 (33%) institutions reported the use of a PROM/ST specifically designed to focus on psychosocial influences related to LBP (eg, KSBT, FABQ, NVT). The BPS model, which emphasizes the assessment of psychosocial determinants of health, is increasingly recognized as the leading approach to explaining and managing pain.<sup>29</sup> With only 1 institution identifying the correct application of the KSBT ST, the chiropractic profession may not be appreciating the BPS model to its full extent.<sup>30</sup> Reflection of use within chiropractic institution teaching clinics may forecast the future practice habits in this area of clinical practice.<sup>13</sup> However, it is important to note this is speculative as there remains a lack of clear understanding of the impact of PROMs/STs in clinical care,<sup>11</sup> and chiropractic teaching

institutions may be addressing psychosocial elements of patient presentation in other forms.

### Limitations

Our study was limited by several factors. Information provided by a representative at each individual chiropractic institution may not have been a full description of the usage of PROMs/STs, and data collection was limited by self-report from 1 representative, leaving the potential for recall/response error. Though our study found a low use rate of PROM/ST instruments purposely aimed at capturing psychosocial factors for patients presenting with LBP, we did not collect data on other forms of potential avenues of addressing psychosocial determinants, thus limiting the ability to view the full landscape of instruction at chiropractic institutions' teaching clinics in this domain. Finally, PROM/ST use in clinical practice is not fully known. We acknowledge that we are unable to make conclusions regarding the implications of use, or lack of use, of PROMs/STs and are merely providing a descriptive overview of PROMs/STs use in US chiropractic teaching institutions.

### CONCLUSION

Teaching clinics in chiropractic educational institutions in the United States are regularly implementing PROMs/STs in clinical care for patients presenting with LBP. This is reflective of the current state of literature, which shows increasing use of PROMs/STs in chiropractic studies. Few institutions described the clinical use of a PROM/ST

specifically designed to detect psychosocial influences, which could reflect the chiropractic profession's failure to fully recognize the BPS model in the assessment and management of LBP.

## ACKNOWLEDGMENTS

The authors thank the representatives who provided data from each participating chiropractic institution in this study.

## FUNDING SOURCES AND CONFLICTS OF INTEREST

There was no funding associated with this study. The authors have no conflicts of interest to disclose.

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## Author Contributions

Concept development: JCC. Design: JCC, KAP. Supervision: JCC. Data collection/processing: JCC, JAG, KAP. Analysis/interpretation: JCC, JAG, KAP. Literature search: JCC, JAG, KAP. Writing: JCC, JAG, KAP. Critical review: JCC, JAG, KAP.

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