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## **Ranges of Motion as a Utility for Outcome Assessments: Chiropractic Taking a Lead Role in Rendering Accurate Assessments for Spine**

By William Owens and Mark Studin | November 22<sup>nd</sup>, 2017

The Academy of Chiropractic has had quite few questions over a long period of time related to patient treatment outcomes and inquires as to the most accurate ways in which to both measure and document them. Bombardier (2000) published a paper in *Spine* entitled “Outcome Assessments in the Evaluation of Treatment of Spinal Disorders: Summary and General Recommendations.” This paper comprehensively reviewed not just outcome assessments, but how the assessment categories are broken down. Although many in the field utilize outcome assessment forms, when working in both clinical and academic environments across the globe, most doctors fall severely short with regard to comprehension of the tools they are using. Most of the time we see that doctors are simply repeating what they hear without understanding it and memorialize it in clinical notes, thereby rendering inaccurate outcomes to the detriment of the patient and the profession.

Outcome assessments were originally created as “tools” for research purposes, specifically to objectify whether specific treatments were working on a global scale within a population. Measurement of the effectiveness of treatment is important for the clinician, but the history related to outcome assessment is based upon making assumptions on large groups of people to make a homogenous statement or predictive statement based on a large group of very different people. In research, investigators want to “group everybody together” and generalize so that they can obtain a starting point to understand the issue they are researching. In this case, the research topic is the effectiveness of a specific treatment, response to chiropractic care in our offices.

When it comes to patient treatment in general and proving effectiveness in an individual patient, we want to be explicit in regard to a specific diagnosis for that specific patient, it is not a process whereby we work off of generalizations. An experienced practitioner shouldn't conclude a definitive prognosis based on what's going on with the rest of the world or even with larger groups of patients. A prognosis should be based upon that particular patient's response at that particular time. As an example, if a patient were to lose a pinky finger in a work-related accident and that patient was a forest ranger, his day would most likely consist of hiking through the woods. That would render one set of conclusions regarding outcomes and his ability to function. However, if that sample patient earned his living as a concert pianist, there would be a major difference in perceived outcomes and his ability to function in their respective occupations. Although we could give both men an impairment rating for the loss of that digit, how that loss might affect their lives is very different and specific to each patient. That is what “patient centered care” is all about, focusing on the individual patient not on the population to which that patient is part. A lot of the most outcome assessment tools are designed give providers treatment pathways, however, to obtain the complete picture, you need to assess each patient's complete clinical documentation, such as changes in pain levels, motor and sensory function, range of motion, location and degree of muscle spasm, neurological function or any other clinically valid finding. Initially in care, perhaps only modalities could be utilized, but later, it could be possible to render chiropractic spinal adjustments, changing the prognosis and plan for future outcome improvements. Therefore, the utilization of a “single assessment tool” can do harm to a patient if not all tools available are considered.

Based upon the last sentence, the inclusion of any “single” assessment tool would appear to be as irresponsible as the

exclusion of any “single” assessment tool. You must consider multiple parameters, both in clinical evaluations combined with a detailed history to conclude an outcome.

Bombardier (2000) wrote, “Clinicians and researchers increasingly recognize the importance of the patient’s perspective in the evaluations of effective of treatment” (p. 3100). This statement is consistent with Sackett, Rosenberg, Gary, Haynes and Richardson (1996) who stated, “Evidence based medicine is not restricted to randomized trials and meta-analyses. It involves tracking down the best external evidence with which to answer our clinical questions” (p. 73).

Both articles realized that effective healthcare requires more than just published research and must include patient feedback is valid in helping to determine the direction of care and outcomes. However, it cannot stop here and therein lies the problem. It is not possible to determine permanencies or lack thereof with a simple “subjective response” to make a conclusive prognosis. Evidence-based care includes 1) published research, 2) the doctor’s experience and input, and 3) the patient’s input, both verbally and through test results so that the care can be “evidence-based.” The “evidence” for care comes from three distinct areas and therefore the results of the intervention must also meet the same level of complexity. There are no shortcuts.

Bombardier (2000) also reported, “A core set of measures should include the following five domains” (p. 3100). This information is leaning a little bit more towards research, however, if you can grasp this general concept, you will begin to understand the miscommunication relating to outcome assessments and what is required to tell the patient’s “true story.” “A core set of measures should include the following five domains: back specific function, generic health status, pain, work disability, and patient satisfaction” (Bombardier, 2000, p. 3100).

When looking at a specific region of the spine, one should focus on these five domains and generically inquire as to what the patient’s presentation is overall. Is he/she an obese smoker? Is he/she fit and active? Are there other comorbidities such as diabetes, a missing limb, etc.? His/her pain should be documented in detail including whether he/she is completely or partially disabled, what his/her work duties are, and, ultimately, whether he/she is satisfied with his/her care. We know that patient satisfaction is a driver of compliance and if we have compliant patients, then we have people that are adhering to their treatment plan, and historically we’re going to get better outcomes.

When it comes to specific back function, there are two main outcome assessments: The Roland-Morris Disability Questionnaire and the Oswestry Disability and both are related directly to spine, specifically the lower back. Historically, chiropractic has considered the spine to be one contiguous organ, but many within the profession are now considering treating the spine segmentally and ignoring the whole. Medicine, conversely started by treating the spine segmentally and is now embracing a whole spine model which in part, is based upon the scientific papers published in neurosurgery journals (following chiropractic’s historic lead). Spinal biomechanics dictates that a whole spine model is critical in spinal stability and long-term spinal health. If you do not consider creating a homeostatic model, then any corrections made will be temporary at best and perhaps undo any compensatory mechanisms within the spinal system. Proper full spine biomechanical analysis is being embraced by the neurosurgical community at a very high level particularly, since it is been shown to influence spinal surgery outcomes and chiropractic shares the same goal; to create a homeostatic, biomechanically balanced spine “post-treatment.”

Scheer et al. (2016) wrote:

Patients with thoracolumbar deformity [scoliosis] without preoperative CD [cervical deformity aka loss of cervical lordosis] are likely to have greater improvements in HRQOL [health related quality of life] after surgery than patients with concomitant preoperative CD. Cervical positive sagittal alignment [cervical lordosis] in adult patients with thoracolumbar deformity is strongly associated with inferior outcomes and failure to reach MCID [minimal clinically important difference] at 2-year follow-up despite having similar baseline HRQOL to patients without CD. This was the first study to assess the impact of concomitant

preoperative cervical malalignment in adult patients with thoracolumbar deformity. These results can help surgeons educate patients at risk for inferior outcomes and direct future research to identify an etiology and improve

patient outcomes. Investigation into the etiology of the baseline cervical malalignment may be warranted in patients who present with thoracolumbar deformity. (p.109)

Neither Roland-Morris nor Oswestry takes into consideration whether the patient's entire spine is involved. As an example, the lumbar spine is in pain, but is it a compensatory lesion with the primary lesion being in the cervical region? Roland-Morris and Oswestry continue to fragment the spine into regions which really are not regions at all, but part of an entire model or organ system. That is a significant drawback in that they're only "assessing" one part of the spine and, therefore, only a portion of an organ system and ultimately only part of the patient's real spinal dysfunction.

When it comes to the generic measures like health status, the SF-36 is highly regarded in that arena. To find more, do a computer search using the search terms "SF-36 outcome measure."

According to Rand Health (n.d.):

As part of the Medical Outcomes Study (MOS), a multi-year, multi-site study to explain variations in patient outcomes, RAND developed the 36-Item Short Form Health Survey (SF-36). SF-36 is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized by managed care organizations and by Medicare for routine monitoring and assessment of care outcomes in adult patients. ([https://www.rand.org/health/surveys\\_tools/mos/36-item-short-form.html](https://www.rand.org/health/surveys_tools/mos/36-item-short-form.html))

Bombardier (2000) commented:

Moreover, the SF-36 Bodily Pain Scale provides a brief measure of pain intensity and pain interference with activities. Health-related work disability should include a minimum of measure of work status and work-time loss...No single measure of patient satisfaction is clearly preferred but guiding principles are provided to choose among available measures. (p. 3100)

Generic health status in the SF-36 includes pain and working disability. It also looks at status and time lost which are important factors that contribute to an accurate diagnosis, prognosis and treatment plan. In addition, our issue with many written, form-based tools is that they're time consuming and can be difficult, particularly with patients of differing socioeconomic status, level of education and language. This issue is addressed by the SF-36. Consistency in patient care is critical and implementing a system that allows all patients to utilize it will render a consistent outcome measure. We don't want to have an electronic interface in the waiting room for outcome measure that can only be utilized by 10% of patients while the other 90% have difficulty because of various issues such as literacy challenges, generations that are not used to technology, or general sloppiness when inputting data (i.e. reversing the 1-10 scale). In those cases, your "data in" is the garbage that you must deal with. In addition, too many doctors "scantily" review the patient portion of the history and if it is not accurate, it creates an inaccurate picture.

Very few individual measures are clearly superior and we must understand that it is the totality of your findings and your patient reports in their entirety that create an accurate picture. If a lawyer, an insurance adjuster, or a medical doctor asks what type of outcome measures you use, the proper answer is, **"I use the patient's objective clinical findings correlated to his/her subjective improvement. That objective data is obtained every visit through my touching the patient, feeling for spasm, determining if the patient can move, stressing joints, and correlating those findings to his/her pain and the historical etiology of the accident/injury/episode, as well as basic and advanced imaging."** It reflects the comprehensive patient assessment performed and becomes close to "bulletproof!"

If you are exclusively using only one of the five assessments, either the Roland-Morris, Oswestry, NPI indexes or pain scales, you are measuring only one of five domains. If you're not doing all five, you are not rendering a complete assessment and potentially doing the patient a disservice and adding an inaccurate statistic to the treatment rendered (not technique, but the chiropractic as a profession). Back specific function, generic health status, pain/disability status and patient satisfaction must be part of your outcome assessment; however, you will still need to add the clinical findings that should correlate and all modalities inclusive of ranges of motion as considered.

Bombardier (2000) wrote:

A generic measure is particularly important in populations with comorbidities...since disabilities from these comorbidities may influence the patients' response to treatment...Generic measures also provide a more comprehensive picture of the patient health status because back specific instruments do not include measures of patients' mental or social health. (p. 3100)

Therefore, managed care, from a business model perspective, has reaped windfall profits because it categorizes people into large populations and creates generic care paths requiring practitioners to be complicit in their profit generation by utilizing these outcome measures. If you do an Oswestry on a 25-year-old yoga instructor and then I do an Oswestry on a 65-year-old railroad worker that smokes every day and eats fast-food, those scores are irrelevant comparatively. The global picture for patient care isn't as effective as looking at the individual patient using a larger cross-section of assessment tools outlined within the treatment record.

Bombardier (2000) stated, "Overall, the SF-36 struck the best balance between length, reliability, validity, responsiveness and experience in large populations of people with back pain" (p. 3101). She continued, "Measures of 'pain severity' are distinct from measures of 'pain affect'" (Bombardier, 2000, p. 3200).

Regarding the spine, when dealing with patients that have a pain syndrome from a muscle problem, a ligament problem, a fracture, a tumor, or a disc herniation, measuring the severity includes "pain severity" questions such as, "How are you today on a scale of 0 to 10?" versus the "pain affect" which is what he/she can or can't do. Those are critically important and they're very different measures and should be considered when considering MMI'ing (maximum medical improvement) your patient.

Bombardier (2000) continued:

Pain severity is how much a person hurts, while pain affect is more complex and reflects a mental state triggered by the pain [like the pinky finger example above]. The measure of pain severity is relatively straightforward, while there are many unresolved questions about the construct of pain affect. For these reasons, it is recommended as part of the core set, to use a brief measure of pain severity. The bodily pain subscale of the SF-36 is the most recommended scale – it has strong psychometric support and extensive normative data. This two-item scale measures pain intensity (six levels: none, very mild, mild, moderate, severe, and very severe) and interference with activities (five levels: not at all, a little bit, moderately quite a bit, extremely). It is a generic pain scale since it asks about overall pain. (p. 3102)

The Patient Satisfaction Scale, (PSS), another outcome modality is a multi-item scale with 17 questions covering information, emotional support and assurance and the effectiveness of prescribed treatment...It, however, does not include issues of access to care, involvement in decision making, coordination of care among caregivers, or trust in one's clinician, which are dimensions of importance to patients. (p. 3102)

Bombardier (2000) concluded by stating:

Finally, the most common reason for using patient-based outcome measures is to assess patients' response to treatment. Is the patient better? How well do the measures described in this special focus issue detect patient improvement when it has occurred? What is their smallest clinically relevant change? There is no set answer

to such questions... These are all different concepts of change. No wonder then that the responsiveness of the RDQ [Roland-Morris Disability Questionnaire] found in the literature will range from 3 to 8 points on its 0 to 24 scale... [That's up to a 33% error rate.] (p. 3103)

When you consider a more expansive subset of subjective complaints and then clinically correlate it to changes in orthopedic, neurological and biomechanical clinical/functional tests that show objective restoration of cervical or lumbar curvatures, decreased muscle spasm, increases in range of motion, increases in functional activity, it now renders a more complete clinical picture as compared to a simple form. An individual "form" which is designed to only consider a portion of the entire spine is severely deficient in rendering any level of accuracy for a complete spinal organ. Too many providers, unfortunately, utilize these forms as a "filler" for poor documentation and render an inaccurate diagnosis, prognosis and treatment plan as a result. That is why complete clinical documentation is the only true way to monitor and assess the patient's response to care.

One of the most important aspects in the functional care of the spine is the range of motion occurring throughout a specific region as well as the individual motor units. In this paper, we purposefully omitted research and validity of ranges of motion as discussed in both the fifth and sixth editions of The Guides to the Evaluation of Permanent Impairment published by the American Medical Association. The AMA Guides clearly position ranges of motion as a valid tool for assessing clinical progress or the lack thereof. However, it should be mentioned that ranges of motion are just one tool and the astute clinician should never rely on just one assessment parameter when determining outcomes. It is the totality of all measures that lend a valid outcome assessment.

We have heard doctors and groups discussion labeling range of motion as invalid which even according to the AMA is an important tool in assessing disability and response to care. To single out ranges of motion as an invalid tool for outcomes is "fodder" for carriers and defense lawyers to utilize against practitioners because the commentary is misleading. To denigrate ranges of motion as an outcome assessment tool is suggesting that it should not be utilized when Medicare, insurance carriers as well as every court in the nation consider it a valid analytical tool when used properly to determine biomechanical pathology.

Measuring outcomes in a patient with a spinal condition is a complex process, however it should not be a surprise. As the spine is one of the most complex systems in the body, chiropractic as a profession is in a perfect position to take a leadership position in the diagnosis, assessment, treatment and management of spinal biomechanical disorders. Leadership requires an intellectual and forward thinking approach to the patient interview, objective documentation and reporting, there is no other way to properly care for a patient and tell their story. We need to embrace the challenge and lead though both our daily clinical practices and teaching all who treat spine.