The Medical and Economic Importance of Measuring Outcomes During Spina Interventions

Ayad Eshtewi 1, Prof. Nikolaj Popov D.Sc 2
1,2 Faculty of Physiotherapy Department of kinesitherapy, Vasil Levski University
Theraby_74@yahoo.com 1, nikipopov67@abv.bg 2

ABSTRACT

Choosing appropriate measuring tool is important during spine treatment stages. When it comes to spine therapies, assessing outcomes is crucial in order to provide a critical assessment of the treatment strategy's efficacy and to offer the necessary evidence to support these claims. This study's major purpose was thus: Spine outcome measurements and evidence-based practice were the focus of several database searches (CINAHL; MEDLINE; PUBMED; EBSCO and COCHRANE LIBRARY), the investigated was in previous experiences in this field. According to the PEDro scale, a number of high-quality studies that associated to chosen topic were identified and cited in this review, it is clear from the study’s findings that choosing an appropriate measuring tool for every specific treatment, shown to be very important. Using the data gathered in this review, clinicians, administrators, and all stakeholders, including patients, will be able to see a clear and measured improvement in the levels of service that either they are providing, receiving, or investing in, based on the use of appropriate intervention measuring tools.

Keywords: Measuring health outcome, Evidence-based practice, back pain, back pain tools.

I. INTRODUCTION

For an overall critical assessment of spinal treatment strategies and to offer the necessary data to support claims, it must utilize a set of procedures that allow interested parties not only to assess service provision on a case-by-case basis but can also allow comparisons between instances. Medical service providers can use between-case comparisons to select the best practices from the best providers and incorporate them into their own service protocols. This is especially significant when attempting to enhance overall service quality. Medical service provision can be assessed using a variety of methodologies, including those that take into account the patient’s age, work situation, and activity level.

Using evidence-based practices (EBP)
Using a treatment policy that has been proven to be beneficial is an important aspect of this medical provider service approach (1). An important feature of Evidence Based Practice (EBP) is choosing interventions or procedures that have been proven to be helpful in the treatment of a specific medical condition, such as spinal injury. In addition, EBP allows for the comparison of treatment efficacy measurements, which is an important element of EBP (2). Aside from the established study findings, clinical knowledge and patient values can still be incorporated into EBP assessments (3).

Clinical audits and clinical governance

EBP relies heavily on the use of outcome measurements, which can subsequently be used to evaluate service quality, efficiency, and effectiveness during spine rehabilitations. For EBP and clinical audits, the use of outcome measures is a vital step in providing the documentation required to support their findings (4). Because of this, outcome measures can play an important role in clinical audits because they are one of the clearest ways to gauge quality (5). A clinical audit's primary purpose is to compare present practices to evidence-based standards; it is via this process of comparison that a care provider may consistently improve their practices and processes. In a clinical audit, the goal is to define standards, assess progress toward those objectives, and make adjustments to better attain or surpass those requirements. Increasing the understanding of the medical service quality goals of the purchasers and stakeholders is often a significant strategy of improvement. Even as (6) explained, outcome measures can provide evidence of how these service quality goals are being attained because they provide a measure of the changing health rank of patients under specific service protocols. Providing this information to patients and other stakeholders can be important in determining the quality of treatment being provided.

To demonstrate that they are providing high-quality, patient-centered health care, health care providers are now required by law to constantly evaluate their work and services. As part of the clinical governance system, clinical audits and evidence-based practice (EBP) are essential components of clinical governance, along with health promotion.

Lower Back Pain (LBP)
A patient's back pain may not be linked to any known physical abnormality. Of the reported back pain cases examined and tested, between 70 to 90 percent of the time it is impossible for doctors to identify any underlying physical or mechanical abnormalities. Many medical disorders can cause back discomfort, such as muscle spasms or injuries, but these are only a few examples. Between 65 and 85 percent of the population will have had some form of back discomfort at some point in their lives, which is not surprising considering the mechanical shocks and strains that the back undergoes (3).

Back discomfort costs the state billions of dollars in both economic and social terms (7). Outcome measures are used in some countries like the UK to evaluate service provision for this particular disease, and these measures use a variety of psychometric qualities based on the specific type of medical conditions. Since the UK government has placed more emphasis on EBP and clinical audits, more attention has been paid to ensuring that the care given is cost-effective. Since there is sufficient evidence to indicate a correlation between LBP and a patient's impression of inadequacy in income as well as discontent with their work environment, even little modifications to medical care can have a big impact on a patient's quality of life.

Measurements of efficacy, efficiency, and quality of health care services can be evaluated using outcomes measures. It may thus evaluate the cost-effectiveness of different health care interventions by integrating outcome measurements with a cost-based assessment (8). Regardless of the advantages of such an approach, it is common practice that cost management and outcome measures assessment go hand in hand, not least since the World Health Organization's annual reports are increasingly constrained by budgetary constraints.

Therefore, this study will examine the existing outcomes metrics employed in this assignment's evaluation. Aside from demonstrating which therapies are most effective at enhancing the quality of life of patients, outcome measurements can also be linked to cost metrics in order to increase the cost-effectiveness of any therapy. This study will illustrate that outcome measures can be a significant aspect of patient care by giving unambiguous documentation to the patient of the therapy interventions' effects. Moreover, if a patient sees even a small improvement in his or her health, the likelihood that he or she will be able to return to his or her old way of life increases.

**Range of outcome measures**
CINAHL, MEDLINE, PUBMED, EBSCO, and the COCHRANE LIBRARY were among the resources queried for information on outcome measures and back pain. There have been a huge number of back pain-specific and generic metrics produced, but only those that incorporated components related to evaluating cost-effectiveness and patient quality of life were taken into consideration when compiling this list. Oswestery Disability Index (ODI), Quebec Back Pain Disability Scale (QBPDS), Rolland and Morris disability (RDQ), and the SF 36 will be discussed in greater detail.

According to (9), the ODI and RDQ measures have many similarities, including the fact that they are easy to understand and that scoring replies isn't tough. Both of these metrics are available in a wide range of formats and languages, allowing them to be used in a wide range of medical settings. The surveys are designed to allow patients to self-report any functional restrictions they may be experiencing. Test-retest reliability is a key factor in these outcome measures, and both of these tests provide reliable evidence that they perform well in this regard (10). It's been argued that the RDQ test has a lesser reactivity to patient changes, despite evidence showing the internal consistency of the test is excellent. Since functional activity can be so subjective, there is a risk of subjective bias sneaking into the use of this test's ordinal scales, which are based on ordinal scales (11). There were fewer options for analysis when turning, lifting, and twisting weren't included in the final index based on their findings.

However, the ODI index has received far more expert support, covering more than ten categories of pain, including: social life, sex; sleeping; standing; sitting; walking; lifting; and traveling. In addition, an organization can analyze the cost-effectiveness of any treatment supplied by using QALYs. Strong evidence suggests that the ODI has a high construct validity and a decent response to slight modifications (12).

QBPDS and SF 36, on the other hand, are more closely associated with generic quality of life indicators. One such test is the SF-36, which assesses 36 different aspects of health and well-being, including physical pain, mental health, social functioning, and physical function (13). QBPDS was shown to be an adequate tool by (14). In this case, simple tasks were used to demonstrate the functional impairment. A total of more than 48 disabilities are included. Factor analysis and test-retest reliability were used in this study. Although it's not a surprise, this test only includes measurements that can differentiate between different stages of disability.
An analysis of the SF 36 shows that it is extremely trustworthy and valid, allowing for a realistic assessment of disease severity (15). As a result, it's obvious that this test is well-suited for use in a group setting because of the modest number of psychometric standards it draws upon. A condition-specific identity and evidence of poor response must be taken into account while evaluating this metric. Although it can be used to treat back pain, there is no special relation to any other aggravating issues, as a result in addition, this measure's completion and scoring procedures are convoluted, making it difficult to compare different intervention methods side by side. Table 1 provides a summary of the comparative elements.

Table 1: Modified the ODI has various features in common to the QBPDS, RDQ and SF 36.

<table>
<thead>
<tr>
<th></th>
<th>Items</th>
<th>Scoring</th>
<th>Time</th>
<th>Cost</th>
<th>Equipment</th>
<th>Self-report</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODI</td>
<td>10</td>
<td>0 / 100</td>
<td>5 m</td>
<td>Nil</td>
<td>Nil</td>
<td>✔</td>
</tr>
<tr>
<td>SF 36</td>
<td>36</td>
<td>1 / 100</td>
<td>5 / 10 m</td>
<td>Nil</td>
<td>Nil</td>
<td>✔</td>
</tr>
<tr>
<td>RDQ</td>
<td>24</td>
<td>0 / 24</td>
<td>5 m</td>
<td>Nil</td>
<td>Nil</td>
<td>✔</td>
</tr>
<tr>
<td>QBPDS</td>
<td>20</td>
<td>0 / 100</td>
<td>5 / 10 m</td>
<td>Nil</td>
<td>Nil</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Justification of choice

Following an evaluation of all four outcome measures, the ODI measure has been shown to be most appropriate (and supported by the Journal of Chiropractic Medicine, from 2008 until now). This is based on the following findings: ODI has good construct validity, adequate internal consistency, high test-retest reliability and responsiveness, and a low burden of administration; thus, it is suitable for use in research. The following data demonstrates this:

- Test-retest reliability \((r = 0.83 \text{ to } 0.99)\)
- Intraclass correlation coefficient values from 0.84 to 0.94 have been reported.
- Responsiveness have been reported to be high.

ODI can be utilized for mixed populations that meet the assignment requirements (supported by the study of (16) since the case is similar enough to the population.

- Number of samples (1,610).
- On PEDRO Scale (High Quality Study).
- Excellent test–retest reliability (0.91).
- Inclusion and exclusion criteria.

### Other strengths for the ODI are

- It does not take a long time to complete (5 minutes).
- It is very easy for the patients to understand.
- Also it is simple to score.
- No equipment required.
- No training required.
- Nil cost.

They believe that this is the best outcome measure to employ for critical evaluation of assignment group's effectiveness as well as quality of service, based on evidence from research conducted with it.

II. IMPLEMENTATION

In order to offer the greatest care at the lowest possible cost to society, EBP analysis and clinical governance systems are built on this foundation. While cost-effective care may be at odds with the greatest care possible, this is not always the case. Patients and providers both should not be driven away from the system by a cost-based care system that does not suit the needs of the customers (the patient population) and providers alike (as more often attributed to quality of life factors). When making decisions that aim to deliver the greatest care but may not garner the approval of the majority of stakeholders who ultimately hold the purse strings, consideration must be given to investment and support considerations that are typically far higher than are realized in any service sector.

To make sensible decisions about their own well-being as well as the efficacy of the services they will deliver, all stakeholders need accurate information from clinical audits. According to some, the health and well-being of another human being should have no monetary limit. Even if it's common, this is a terrible commentary on our society. This has led to a split in the medical and social communities on what constitutes best practice; the medical perspective is one option (17). The use of outcome metrics could also be viewed from a much broader social perspective (18).

In any case, the ODI can be adopted and implemented in as little as 3 weeks for baseline investigations and as little as 12 months for full-scale deployment. Often, pilot studies are used to introduce new procedures into the system in a smaller size. When new methods and analytical techniques are introduced, it is often necessary for employees to be retrained. Among the most important features of any of these outcomes measures is the primary engagement of patients in the design, delivery, and improvement of service (19). When it comes
to making or even considering modifications to a health care service, the primary user and funder of the service, the patient, must be involved.

Preparation is often required prior to the implementation of any changes, including the collecting of outcomes data. By employing strategic planning techniques, this can be achieved. It is not uncommon for future auditing studies to be necessary even after an initial reporting of outcome measures, such as this study, to amend the data and reflect any progress made. An initial research may be best used as a benchmarking tool for the department, which may be used both internally and externally against expectations on a local or international level.

**Evidence standards and dissemination**

Cross-comparative analysis based on existing evidence would presumably be carried out using the ODI outcome measure (applying the EBP). Despite the fact that these standards may be open to criticism, they can nonetheless give some documentation for anyone who want to interpret ODI scores. Scores and perceived influence on life quality are depicted in Table 2 below.

<table>
<thead>
<tr>
<th>ODI Index Score</th>
<th>Disability Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20%</td>
<td>Minimal Disability</td>
<td>The patient is able to perform most daily tasks. Typically, there is no need for treatment other than instruction on how to lift, sit, and exercise.</td>
</tr>
<tr>
<td>20-40%</td>
<td>Moderate Disability</td>
<td>Sitting, lifting, and standing are all more difficult for the sufferer. It is more difficult for them to travel or socialize, and they may be unable to return to their jobs. In most cases, the patient's ability to take care of themselves, engage in sex, and sleep is unaffected and can be handled using conservative methods.</td>
</tr>
<tr>
<td>40-60%</td>
<td>Severe Disability</td>
<td>In this group, pain is still the primary concern, but daily activities are impaired. Patients with these conditions necessitate a thorough examination.</td>
</tr>
<tr>
<td>60-80%</td>
<td>Crippled</td>
<td>There is no part of a patient's life that is unaffected by the presence of back pain. It's time for a change for the better.</td>
</tr>
<tr>
<td>80-100%</td>
<td>Bed bound or exaggerating</td>
<td>These patients are either confined to their beds or exaggerating their pain.</td>
</tr>
</tbody>
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### III. CONCLUSIONS AND RECOMMENDATIONS

- An obvious and quantifiable improvement in service levels can be seen by the patient and all stakeholders if these indices are used, including the doctor, administrator, and all other stakeholders. These findings can also be published as follows.
Before anything else: write a thorough report on the new treatment and try to explain in this report the change before and after treatment by using this method that has been discussed in this study.

- A panel discussion in the workplace can help colleagues understand the level of new treatment, as well.
- The health industry, on the other hand, should consider conducting radio and television interviews to disseminate the word about this research.

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