

## COMPARISON BETWEEN MODIFIED OSWESTRY LOW BACK PAIN DISABILITY QUESTIONNAIRE AND ABERDEEN LOW BACK PAIN SCALE TAKING LOW BACK-SPECIFIC VERSION OF THE SF-36 PHYSICAL FUNCTIONING SCALE AS A GOLD STANDARD IN PATIENTS WITH LOW BACK PAIN

DHEERAJ LAMBA<sup>1\*</sup>, RITAMBHARA K UPADHYAY<sup>2</sup>

<sup>1</sup>Department of Physiotherapy, Jimma University, Jimma, Ethiopia, <sup>2</sup>Department of Technology, Jimma Institute of Technology, Jimma University, Jimma, Ethiopia. Email: dheeraj.lamba@gmail.com

*Received: 12 June 2018, Revised and Accepted: 24 July 2018*

### ABSTRACT

**Objective:** The objective of the study was to compare the modified Oswestry low back pain (LBP) disability questionnaire with Aberdeen LBP scale (ABPS) and to find out which scale is better for functional assessment in LBP patients.

**Methods:** A total of 100 randomly selected patients who fulfilled the inclusion criteria were recruited for the study. Modified Oswestry LBP disability questionnaire and ABPS were compared with a gold standard that is a low back-specific Version of the SF-36 Physical Functioning Scale. Statistical comparison was done using one-way ANOVA to find out which scale is better for assessing functional disability in LBP patients.

**Results:** On analyzing the results using one-way ANOVA both the scales, i.e., modified Oswestry disability questionnaire and ABPS showed significant values indicating that both are equally reliable and effective tools and either can be used as outcome measurement tool in patients suffering from LBP.

**Conclusion:** The present study concludes that the modified Oswestry disability questionnaire and Aberdeen low back scale both are equally reliable and effective outcome measurement tools for the assessment of patients suffering from LBP.

**Keywords:** Low back pain, Modified OSW, Aberdeen low back pain scale, LB-SF36 and ROM.

© 2018 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2018.v11i11.27909>

### INTRODUCTION

“Low back pain (LBP) is defined as a common, painful condition affecting the lower portion of the spine, with or without radiating symptoms to the leg or legs. “LBP can be classified as acute, subacute, and chronic. [1] LBP is a major cause of discomfort and disability in developed countries and is estimated to be the most prevalent pain complaint. Overall, about three-quarters of the general population have experienced LBP at the same time [2]. In our country, the occurrence of LBA is high; nearly 60% of the people across the world suffer from back pain at some point in their lives [3]. It affects both the genders equally. The onset most frequently occurs in people aged 25–50 years. It is one of the most common causes of work-related disability. As per the Occupational Health Guidelines physical demand of work, namely lifting, manual materials handling, twisting, bending, and whole body vibrations have been found to be the primary risk factors for LBP [4-6]. The use of standardized self-report questionnaires could provide a more convenient and reliable method of measuring activity limitations associated with the low back problem, and of monitoring response to treatment [7]. Questionnaires designed to measure aspects of health are called health measurement scales. They are also called health status or health outcome measures, functional status or functional outcome measures, disability measures or health-related quality of life measures, and clinical indices [8]. Two of the most commonly used disability scales for people with LBP are “modified Oswestry LBP disability questionnaire” (modified OSW) and “Aberdeen LBP scale” (ABPS) [9,10].

### METHODS

#### Study design

This was a comparative cross-sectional study.

#### Study set-up

Subjects were recruited from the Outpatient Department of Orthopaedic and Outpatient Department of Physiotherapy, Jimma University Specialized Hospital, Jimma, Ethiopia.

#### Sampling method

Random sampling method was used.

#### Study population

A total of 100 patients who could read and write English were selected.

#### Inclusion criteria

The following criteria were included in the study:

1. Both male and female
2. Patients age between 25 and 50 years
3. Patients with LBP with or without radiating pain
4. Patients who could read and write English.

#### Exclusion criteria

The following criteria were excluded from the study:

1. Intermittent vascular claudication
2. Spondylolisthesis
3. History of Vertebral fracture in the past
4. History of Spinal surgery in the past
5. Systemic disorders such as tuberculosis of the spine or rheumatoid arthritis
6. Diabetic neuropathy
7. Stroke
8. Amputation
9. Spinal tumors.

**Outcome measures**

1. Modified Oswestry LBP Disability Questionnaire (Modified OSW)
2. ABPS
3. Low back-specific version of the SF-36 physical functioning scale (LB-SF 36).

Patients who fulfilled the inclusion criteria and diagnosed as LBP by the orthopedic surgeon and by routine clinical examination were taken for the study purpose. The physical examination included localization of the pain, the assessment of spinal movements, and Straight Leg Raising test. All procedure were adequately explained to the patients, and written consent was taken from each of them.

**Procedure**

After the evaluation, scales were administered. It was made sure that the patients responded to every scale and were asked to give single best response. It was made sure by explaining the procedure to the patient properly. The scales were administered subsequently. To keep the procedure identical modified Oswestry LBP disability questionnaire was administered first followed by the ABPS and then low back-specific version of the SF-36 physical functioning scale administered as an indicator of meaningful change in a person's health. After the administration of the scales, total score was obtained and statistically analyzed.

**Data analysis**

Statistics were performed using SPSS software 22.0. Level of significance selected for the study was  $p < 0.05$ .

**RESULTS**

Comparison between modified Oswestry LBP disability questionnaire and ABPS was done using one-way ANOVA (Tables 1 and 2, Graph 1 and 2).

There was a statistical significant difference seen for both the scales, i.e., modified Oswestry disability questionnaire and ABPS showed significant values indicating that both are equally reliable and effective tools and either can be used as outcome measurement tool in patients suffering from LBP.

**Table 1: Representation of mean, SD, and variance**

Descriptive statistics			
Parameters	n	Mean±SD	Variance
OSW	100	37.0800±11.99131	143.792
ABPS	100	38.1900±12.34986	152.519
LBSF36	100	62.1500±11.70632	137.038
Valid N (listwise)	100		

SD: Standard deviation, ABPS: Aberdeen low back pain scale

**Table 2: Descriptive analysis: One-way ANOVA for comparison of two scales**

One way ANOVA					
Parameters	Sum of squares	df	Mean square	F	p value
OSW					
Between groups	14027.627	38	369.148	108.399	0.000
Within groups	207.733	61	3.405		
Total	14235.360	99			
ABPS					
Between groups	14293.640	38	376.148	28.477	0.000
Within groups	805.750	61	13.209		
Total	15099.390	99			

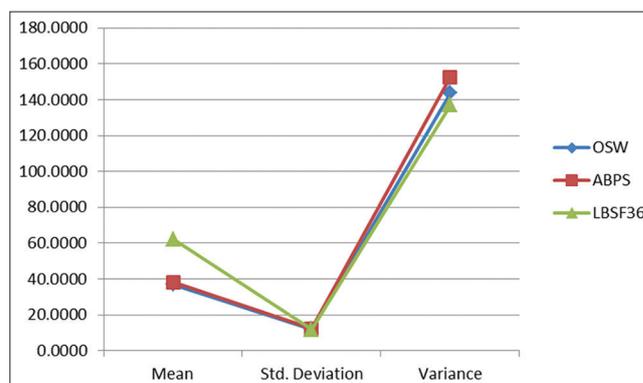
ABPS: Aberdeen low back pain scale

**DISCUSSION**

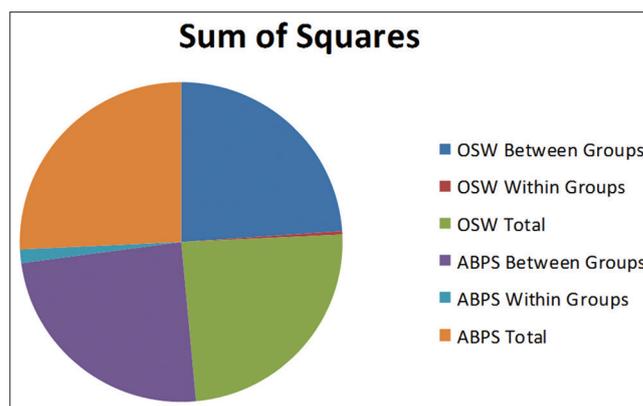
LBP requires evaluation of the impairment; functional limitation and disability using tools with adequate measurement characteristics. The prime aim of the physiotherapy treatment is restoration of the normal function, and thus the physiotherapists are dependent on measurement tools for accurate assessment of functions and monitoring of changes in functions over a period of time [7]. Many self-report questionnaires for measuring LBP and disability have been developed and published. The aim of the present study was to compare and analyze two pain disability scales, modified Oswestry LBP disability questionnaire and ABPS in the assessment of LBP. For obtaining strong evidence of validity and reliability, both these questionnaires tools have been widely used in clinical trials worldwide.

A back-specific and a generic health status questionnaire together provide a comprehensive method for the assessment of the activity and participation domains of the World Health Organization International Classification of Functioning, Disability and Health. Completing two forms presents a considerable burden in terms of patient and therapist time. This eliminates the need to administer both a generic and a back-specific questionnaire by developing a low-back version of the SF-36 physical functioning scale (LB-SF-36) and scale appears to offer advantages over the use of the original scale for the assessment of functioning in patients with LBP [11,12].

For statistical comparison between modified Oswestry LBP disability questionnaire and ABPS one-way ANOVA was used. In the present study, all the questionnaires percentage data score has been used for statistical analysis, which concluded that both the questionnaires are equally efficient to evaluate functional disability level in patient with LBP [9,13].



**Graph 1: Graphical representation of mean, standard deviation, and variance**



**Graph 2: Comparison as per one-way ANOVA analysis**

**CONCLUSION**

This concludes that the both modified Oswestry disability questionnaire and ABPS both have good potential and either of them can be used as outcome measurement tool in patients suffering from LBP.

**ACKNOWLEDGMENTS**

We are thankful to the Department of Physiotherapy, Department of Technology, Jimma University, Ethiopia, for helping in carrying out this research to a fruitful outcome.

**AUTHOR'S CONTRIBUTIONS**

Both the authors played a key role in carrying out the study to a fruitful outcome. Ethical approval, implementation of the research, and data collection were done by the first author. Study design, data analysis, and interpretation with proof reading were done by the second author. Both the authors contributed in conceptualisation of the research, revisions of the article and final approval of the version to be published.

**CONFLICTS OF INTEREST**

There are no conflicts of interest of any sort.

**REFERENCES**

- Burton AK, Balagué F. European Guidelines for Prevention in Low Back Pain. Back Pain in Europe; 2004.
- Suarez-Almazor M, Kendall E. Use of health status measures in patients with low back pain in clinical settings. Comparison of specific, generic and preference-based instruments. *Rheumatology* 2000;39:783-90.
- Shyamal K, Gurpreet S. Severity of disability in elderly patients with low back pain in Amritsar Punjab. *Arthropologist* 2008;10:265-8.
- Liebenson C. Rehabilitation of the Spine: A Practitioner's Manual. 2<sup>nd</sup> ed. Baltimore: Lippincott Williams & Wilkins; 2007.
- Boonen A, Rasker JJ. The international classification for functioning, disability and health. *Clin Rheumatol* 2007;26:1803-8.
- Tripathy A, Adiga S, Shah HH, Shanbhag T, Kumar DA. Retrospective study of clinical profile and drug prescribing pattern in osteoporosis in a tertiary care hospital. *Int J Pharm Pharm Sci* 2015b;7:390-3.
- Davidson M, Keating JL. A comparison of five low back disability questionnaires: Reliability and responsiveness. *Phys Ther* 2002;82:8-24.
- Streiner DL, Norman GR. Health Measurement Scales: A Practical Guide to their Development and Use. 2<sup>nd</sup> ed. Oxford: Oxford University Press; 1995.
- Fritz JM, Irrgang JJ. A comparison of a modified Oswestry low back pain disability questionnaire and the Quebec back pain disability scale. *Phys Ther* 2001;81:776-8.
- Muller U, Duetz MS. Condition-specific outcome measures for low back pain. *Spine* 2004;13:301-3.
- Ruta DA, Garatte AM, Wardlaw D, Russell IT. Developing a valid and reliable measure of health out patients with low back pain. *Spine* 1994;19:1887-96.
- Davidson M, Keating JL. A low back-specific version of the SF-36 physical functioning scale. *Spine* 2004;29:586-4.
- Pandey K, Vinay D. Quantification and classification of low back pain severity based on Aberdeen low back pain scale. *J Appl Natl Sci* 2015;7:92-7.