



Original Article:

Comparison of Subjective and Objective Physical Functions in Patients with Chronic Low Back Pain

Agwubike EO, Department of Health, Environmental Education and Human Kinetics, Faculty of Education, University of Benin, Benin City, Nigeria,

Ezeukwu AO, Department of Medical Rehabilitation, Faculty of Health Sciences & Technology, University of Nigeria, Enugu Campus, Nigeria.

Address for Correspondence:

Antoninus O. Ezeukwu,

Department of Medical Rehabilitation,
Faculty of Health Sciences & Technology,
University of Nigeria,
Enugu Campus, Nigeria.

E-mail: leo_ninus@yahoo.com

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Abstract: Purpose: To compare the subjective and objective physical function scores of patients with Chronic Low Back Pain (CLBP). Method: A cross-sectional survey design was used. Fifty-one patients with CLBP of mechanical origin were recruited from the physiotherapy out patient clinics of the University of Nigeria Teaching Hospital and the National Orthopedic Hospital both in Enugu, Nigeria. The box numerical scale, Roland-Morris Questionnaire (RMQ-24) and the Back Performance Scale (BPS) were used to assess the present pain intensity, the subjective and objective functional status of the participants respectively. Pearson correlation was used to determine relationships. Multiple Regressions were used to determine the predictors of objective function. Alpha level was set at 0.5. Results: The mean age and Body Mass Index of the participants were 49.04 ± 14.33 years and 26.57 ± 4.29 kg/m² respectively. The mean Pain Intensity, subjective disability (RMQ) and objective disability (BPS) scores were 6.33 ± 2.09 , 9.76 ± 5.14 and 6.43 ± 2.9 respectively. Stepwise multiple regressions showed that when all the variables were entered only marital status was a significant predictor of objective physical function. Conclusion: There is no significant association between subjective and objective functions in patients with CLBP. However, marital status (married) is a significant predictor of objective function in CLBP.

Key Words: Objective; subjective; Chronic low back pain; Roland-Morris; Back Performance

Introduction:

It is not new to science that human beings have adapted a bipedal position. However, this adaptation comes with its myriad of musculoskeletal health problems and challenges, among which is Low Back Pain (LBP). LBP is defined as pain between the costal margins and the inferior gluteal folds.¹ It is said to be chronic when the pain is intermittent or persistent for greater than or equal to three consecutive months within twelve months.²⁻⁵ It is ubiquitous to every population no matter the level of technological or industrial advancement. In recent times, its incidence and prevalence are on the increase, thus necessitating closer attention. Hence, clinicians are constantly grappling with how best to evaluate this clinical syndrome.⁶

Physical Function (PF) is defined as the sensorimotor performance of an individual that includes fundamental and complex Activities of Daily Living (ADL)⁷, and patients with Chronic Low Back Pain (CLBP) frequently report of reduced PF.^{8,9} Rehabilitation specialists, Physiotherapists and Exercise scientists are recently engaging in the clinical application of evidence based research in the management of patients with CLBP. To this end, different outcome measures are used in the evaluation of such patients to meet a SMART-oriented (Specific, Measurable, Achievable, Realistic and Timed) goal. Usually, these outcome measures can be clinician-administered/assessed or patient self-reported. In essence, it can be objective or subjective. Some of the outcome measures include the Oswestry Low Back Pain Disability Questionnaire¹⁰, Pain Disability Index¹¹, Quebec Back Pain Disability Scale^{12,13}, Curtin Back Screening Questionnaire¹⁴, Roland-Morris Disability Questionnaire¹⁵, Back Performance Scale¹⁶ and Physical Performance Test battery.¹⁷ The psychometric properties of these instruments have been determined in various populations.

Sometimes, the therapist makes his/her objective assessment without recourse to the patients self-reported assessment. There is need to compare the patients' assessment of their functional status during CLBP with the clinician-observed assessment using standardized outcome measure. This is the focus of the present study.

Research Questions

The following questions were raised:

1. What is the self-reported functional status of patients with CLBP?
2. What is the clinician observed functional status of patients with CLBP?
3. What is the relationship between the self-reported functional status and clinician observed functional status of patients with CLBP?
4. What are the clinical predictors of objective function in patients with CLBP?

Materials and Methods:

Research design

A cross-sectional survey design was used. This design was used because the data was obtained only once from the participants.

Participants

Fifty-one patients with CLBP of mechanical origin were recruited from the physiotherapy out patient clinics of the University of Nigeria Teaching Hospital and the National Orthopedic Hospital both in Enugu, Nigeria

Materials

1. Biodata form was used to record personal information about the participants
2. Box numerical scale was used to assess the present intensity of the pain in the low back of each participant. It consists of eleven small boxes arranged horizontally and containing eleven numbers (0-10), with 0 representing “no pain” while 10 represents the “worst pain” as recommended by Mc Dowell and Nowell.¹⁸
3. Back Performance Scale (BPS) was used to assess objective physical function of the participants. It consists of five physical performance test of daily activities requiring mobility of the trunk.^{16,19} The tests include the sock test, pick-up test, roll-up test, fingertip-to-floor test, lift test. Each of the tests of the BPS is scored on a 4-point ordinal scale according to observed function. The BPS sum score ranges from 0 to 15. Test-retest reliability of the BPS score is 0.996 while its concurrent validity has also been demonstrated.¹⁹
4. Roland-Morris Questionnaire (Roland and Morris¹⁵) was used to assess the subjective disability of the participants. The original (RMQ-24) which was used in this study contains 24 yes/no items. Participants were asked whether the statements applied to them that day (the last 24 hours). The RMQ-24 score was calculated by adding up the number of “yes” items, ranging from 0 (no disability) to 24 (maximum disability).

Procedure

The procedure for the study was explained to the participants and their informed consent was obtained. The following demographic information were obtained from the participants in terms of age recorded to the nearest birthday, gender, marital status, educational status, employment status and date/month of onset of low back pain. The participants’ weights and heights were measured using a dual purpose stadiometer. The box numerical scale, Roland-Morris Questionnaire (RMQ-24) and the Back Performance Scale (BPS) were used to assess the present pain intensity, the subjective and objective functional status of the participants respectively.

Method of data analysis

The Predictive Analytics Software (PASW- version 17) was used to analyze the data. Descriptive statistics of mean, standard deviation and range was used to summarise the continuous variables. Pearson correlation was used to determine relationships. Multiple Regressions were used to determine the predictors of objective function. Alpha level was set at 0.5.

Results:

The participants’ demographic characteristics are presented in Table 1 while the results are collapsed in Tables 2-4.

Variable	Mean ± SD	Range
Age (yrs)	49.04±14.33	23-80
Weight (kg)	72.98±13.49	33-99
Height (m)	1.68 ±0.07	1.50-1.87
BMI (kg/m ²)	26.57±4.29	19.63-40.68
Pain intensity (/10)	6.33±2.09	2-10
RMQ (/24)	9.76±5.14	0-19
BPS (/15)	6.43±2.9	1-14
Duration (months)	94.47±85.91	3-384

The demographic characteristics of the participants are shown in Table 1. The results show that the participants mean age and BMI were 49.04±14.33 years and 26.57±4.29 kg/m² respectively. The Pain Intensity score had a mean of 6.33 ± 2.09 on a 10 point scale. The subjective disability (RMQ) score had a mean of 9.76±5.14 on a 24 score scale. An objective disability (BPS) score of 6.43 ±2.9 on 15 point scale was obtained.

Variable	Frequency (n)	Percentage (%)
Sex		
Male	20	39.2
Female	31	60.8
Marital status		
Single	9	17.6
Married	39	76.5
Widowed	3	5.9
Highest Employment status		
Unemployed	7	13.7
Part time	3	5.9
Full time	33	64.7
Retired	8	15.7
Educational status		
None	3	5.9
Primary	7	13.7
Secondary	9	17.6
Tertiary	32	62.7
Nature of pain		
Persistent	24	47.1
Recurrent	27	52.9

Table 2 shows the frequency distribution of characteristics of the participants. More than half (60.80%) of the participants were female while 82.4% of the participants were either married or widowed. At least more than half were either employed on full-time (64.7%) or had attained tertiary education (62.7%). The nature of the pain was more recurrent (52.9%) than persistent (47.1%) in the participants.

		BPS	RMQ	PI	Duration
BPS	r	1	-0.122	-0.229	0.098
	Pvalue		0.395	0.105	0.495
RMQ	r		1	0.213	0.276
	Pvalue			0.134	0.050
PI	r			1	-0.013
	Pvalue				0.929
Duration	r				1
	Pvalue				

BPS: Back Performance Scale; RMQ: Roland-Morris Questionnaire; PI: Pain Intensity; r: Pearson Correlation Coefficient

Correlation coefficients of the clinical variables are presented in table 3. None of the variables were significant statistically. Stepwise multiple regressions showed that all the variables were entered only marital status was a significant predictor of objective physical function. It accounted for 25.1% of the variance due to back performance scale score.

Model	R Square change	F change	Sig F change
1	0.252	7.701	0.011

Predictors: (constant), marital status; Dependent Variable: BPS
 Table 4 shows that only marital status was a predictor of objective physical function assessed using BPS

Discussion:

The purpose of this present study was to compare the scores of objective and subjective physical functions in patients with CLBP. The results suggests that majority of the patients were middle aged adults (49.04±14.33 years). This raises many pos-

sibilities. Since the duration of the pain since initial onset provided a skewed data, this gives us a clue that most of the participants have been having LBP since their young adulthood. In essence, this supports the fact that it is the majority of young adults that have the onset of this pain. The average BMI of the participants suggests that as a group majority of the patients were overweight. Adegoke and Ezeukwu²⁰ have reported similar findings among patients with CLBP in their study which focused on pain intensity, self efficacy and physical performance of the patients.

The correlation between the subjective (RMQ) and objective (BPS) physical functions of the patients was not statistically significant. This suggests that although these two variables are measuring physical functions, they are measuring different components of physical function. It may imply the need for multidimensional approach in assessing function. It is also necessary to develop an outcome measure with good psychometric properties to assess function in CLBP taking note of the various domains. Pain intensity had no significant relationship with the physical function of the patient. Adegoke and Ezeukwu²⁰ obtained similar results. This implies that a change in the level of pain intensity does not affect the functional status of the patient with CLBP. The length of time the pain has persisted does not relate with either the pain intensity or the functional status. It goes to suggest that the longer the duration since initial onset of pain does not necessarily relate to the level of disability or functional status of the patient. It is also possible that the other personal or environmental factors may be responsible for this.

Marital status was the only significant predictor of the objective functional status. It has been shown that patient attitudes²¹, expectancies of pain or reinjury^{22,23}, psychological distress levels^{23,24} and self-efficacy^{20,22} can have some impact on patients performance. It is also possible that the marital life offers a process that improves the function of the patient with CLBP by integrating a positive balance. Secondly, majority of the participants were either married (76.5%) or were females (60.8%). It is therefore possible that the experience of child bearing/birth offers added advantage that ends in reducing the level of disability.

Conclusion and Recommendations:

There is no significant association between subjective and objective function in patients with CLBP. Marital status (married) is a significant predictor of objective function in CLBP. Therefore, the presence of CLBP in people does affect both the subjective and the objective functional status of such individuals. This therefore calls for a multi-disciplinary approach to the management of such individuals.

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