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Physical Medicine

The Study Examines the Correlation between the Intensity of Pain and the Oswestry Disability Index in Patients with Chronic Non-Specific Low Back Pain

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Abstract	Original Research Article

Background: Back pain has become an important health issue now days. Patients with chronic non-specific low back pain (CNSLBP) have pain, disability, and decreased functional capacity, however, the association is still unknown. **Objective:** Assessment of disability by using Oswestry Disability Index in chronic non- specific low back pain patients. **Methodology:** This is a descriptive type of cross-sectional study was conducted in the department of PM & R, DMCH from both outpatient and inpatient. Total 103 patients having with low back pain, seeking treatment in department of Physical Medicine & Rehabilitation during the study period, fulfilling enrollment criteria was enrolled in this study. All the cases were evaluated properly with complaint of chronic non-specific low back pain. The quantitative observations were indicated by frequencies. Chi square test was used to analyze the categorical variables, shown with cross tabulation. ANOVA test was used for continuous variables. A "p" value <0.05 was considered as significant. **Results:** Of the patients, over half (52.4%) had severe disability, followed by moderate (27.2%), crippled (13.6%), and little (7-8%). A statistically significant increase in pain intensity (p <0.001) corresponds to an increase in the degree of disability. **Conclusion:** The severity of impairment worsens as pain intensity and duration increase. The length and degree of pain are significantly associated with disability.
Key word: Oswestry Disability Index, correlation, relationship, chronic non-specific low back pain.

INTRODUCTION

Low back pain (LBP) is the second most prevalent cause of disability globally [1]. The assessment of impairment in individuals with low back pain (LBP) is a crucial metric for both clinical practice and research. The Oswestry impairment Index (ODI) is a frequently utilized scale for evaluating the impairment associated with lower back pain (LBP) [2].

Spontaneous episodes of low back pain frequently occur during everyday activities, and its cause is influenced by various elements, including biology, sociodemographic factors and behavior. This indicates that persons who experience this pain have diverse characteristics and backgrounds. Furthermore, the origins and risk factors of this condition remain poorly comprehended, mostly because to the lack of association between its current and future symptoms and pathological and imaging tests [3].

This type of back pain is known as nonspecific low back pain and is defined as chronic when it persists for more than 12 weeks [4]. Clinical practice and scientific research have used clinical assessment tools to monitor the effectiveness of the intervention in clinical settings as an outcome measurement. Several self-reported disability questionnaires have been used as outcome measures for LBP patients such as the Oswestry Disability Index (ODI), Roland-Morris Disability

Questionnaire, and Quebec Back Pain Disability Scale [5].

A study on prevalence of low back pain (LBP) among medical professionals in Dhaka city shows that almost every individual (96%) suffered by low back pain, 59.6% of them suffered by moderate pain and 11.6% individuals suffered by severe pain [6]. Persistent pain always entails a certain degree of disability. Disability in low back pain patients can be gauzed through means of dedicated and scientifically validated questionnaires such as Oswestry low back pain disability questionnaire, the Ronald- Morris questionnaire and the Core Outcome Measurement Instrument [7].

METHODOLOGY

All the diagnosed individuals with chronic non-specific low back pain after fulfilling enrollment criteria was enrolled in this study. The patients were informed in details regarding the procedure of the study and written consent was obtained. Then, data was collected by face-to-face interview of patients using a structured questionnaire. Total ODI was calculated out of 50, and then multiplied by 2 and thus converted it as percentage. Question about sex life (ODI-8) was asked at the end of the interview. Some individuals did not answer this segment, some women had menopause, hysterectomy and some were divorced, widow, widower. They were labeled as not applicable in regard to ODI-8 and total ODI was calculated out of 45. Then, the ODI was converted into percentage. Statistical analyses were carried out by using the Statistical Package for Social Sciences version 23.0 for Windows (SPSS Inc., Chicago, Illinois, USA). A descriptive analysis was performed for all data. Data were expressed as numbers; percentages and mean ± SD. The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies. Chi square test was used to analyze the categorical variables, shown with cross tabulation. Chi square is a nonparametric test used in case of qualitative data or quantitative data with skewed distribution. ANOVA test was used for continuous variables. It is a parametric test used in case of normally distributed quantitative data with more than two variables. A ―p‖ value <0.05 was considered as significant.

RESULTS

Table 1 shows that almost three fourth (72.8%) patients belonged to age group 40-49 years with mean age was 47.0±4.7 years. The majority 57(55.3%) patients were female and rest 46(44.7%) were male. Table 2 shows that 63(61.2%) patients had pain during the period of ≤6 months. The mean duration of illness was found 6.2±2.8 months. Table 3 shows that more than half (52.4%) of the patients had severe disability, 27(26.2%) had moderate, 14(13.6%) had crippled and 8(7.8%) had minimal disability. Table shows that degree of disability increases with the increase of pain intensity (p <0.001) that is statistically significant (Table-4).

Table 1: Distribution of the study patients by age (n=103)

Age in years	Number	Percentage
40-49	75	72.8
50-59	28	27.2
Mean ±SD	47.0 (±4.7)	
Sex		
Male	46	44.7
Female	57	55.3

Table 2: Distribution of the study patients according to duration of pain (n=103)

Duration of illness (months)	Number	Percentage
≤6	63	61.2
7-12	37	35.9
>12	03	2.9
Mean ±SD	6.2±2.8	Range 3-14

Table 3: Distribution of the study patients according to disability (n=103)

Disability	Number	Percentage
Minimal	08	7.8
Moderate	27	26.2
Severe	54	52.4
Crippled	14	13.6

Table 4: Association between Pain intensity with disability (n=103)

Pain intensity (VAS)	Disability				p value
	Minimal (n=8)	Moderate (n=27)	Severe (n=54)	Crippled (n=14)	
Mild	08 (100)	25(92.59)	03(5.56)	0	<0.001
Moderate	0	02(7.40)	39(72.22)	5(35.71)	
Severe	0	00	12(22.22)	9(64.28)	
Total	**08 (100%)**	**27 (100%)**	**54 (100%)**	**14(100%)**	

s= significant, P value reached from ANOVA test

DISCUSSION

In this study observed that almost three fourth (72.8%) patients belonged to age group 40-49 years with mean age was 47.0±4.7 years. Lee *et al.,* [1] reported the mean age was 40.7±11.4 years. Kim *et al.,* [8] observed the mean age was 40.47±12.26 years. Aoki *et al.,* (2012) observed the mean age: 72.5 years old, range: 65–88 years old. Monticone *et al.,* [9] (2012) also found mean age was 47.7±12.3 years.

In present study showed that majority (55.3%) patients were female and rest 46(44.7%) were male. Lee *et al.,* (2017) reported female was 103(45.8%). Aoki *et al.,* [10] (2012) also observed 30 males and 26 females. Monticone *et al.,* [9] (2012) observed 112(62.6%) were female and 67(37.4%) were male. Kim *et al.,* [8] (2014) reported 90 were male and 43 were female.

In current study showed that more than half (52.4%) of the patients had severe disability, 27(26.2%) had moderate, 14(13.6%) had crippled and 8(7.8%) had minimal disability. Thakur *et al.,* (2017) observed that 42.3% patients had severe disability, 27.9% were crippled, 17.3% had moderate disability, 7.7% were bed ridden and 4.8% of patients had mild disability. Kortor *et al.,* [11] (2018) observed that 52.4% of patients had a moderate disability, 25.4% of patients had a severe disability, 21.4% of patients had mild or no disability and only one patient 0.8% was crippled. Mitra *et al.,* [12] (2017) showed 65% had minimal disability, 23% had moderate disability, 5% had severe disability, 4% were crippled and 3% were bedbound. Asrar and Bansal (2019) showed 67% had moderate and 24% with severe disability [13]. Jeyakumar and Segaran (2018) showed the Oswestry disability index score revealed that 24 percent of the operating room nurses were moderately disabled by LBP [14]. Zahra *et al.,* (2020) detected disability in 70.8% of individuals by using ODI [15]. Madeira *et al.,* [16] (2013) saw the level of disability ranged from mild to moderate in most cases.

In this study we see that disability and its severity significantly related with pain intensity (p=.001) and duration of pain (p=0.006). Salvetti *et al.,* [17] (2012) also observed a higher disability prevalence ratio among patients with intense pain (p<0.001) and longer pain duration (p=0.034). Thakur *et al.,* [18] also observed a greater trend towards disability among participants with more intense pain.

CONCLUSION

The ODI is a useful tool for identifying the level of disability in those with persistent non-specific low back pain. The severity of disability increases as pain intensity and duration rise. The length and severity of pain are significantly correlated with impairment.

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