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ASSOCIATION OF CHRONIC LOW BACK PAIN AND DEPRESSION AT A TERTIARY CARE SETTING OF PAKISTAN

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ABSTRACT

Objective: To assess the association of Depression with Chronic Low back pain.

Methodology: In this cross-sectional investigation, 169 participants with a mean age of 54.1 years were studied at the PN Shifa medical outpatient department in Karachi, Pakistan. The research was conducted over a three-month period, from June to August 2020, using a non-probability convenience sampling approach. The severity of low back pain (LBP) was measured using the Numeric Rating Scale (NRS) and the Wong Baker Faces Pain Rating Scale. To evaluate levels of depression, the Patient Health Questionnaire (PHQ-9) scale was employed. The Chi-square test and one-way ANOVA test were used to establish statistical significance.

Results: Patients with moderate to severe chronic low back pain (CLBP) demonstrated higher pain levels on both the Wong Baker Faces Pain Rating Scale and NRS, with a p-value of 0.000. Based on the PHQ-9 scores, severe depression correlated with more intense pain, with a p-value of 0.000, and greater pain severity in the current and previous week (as assessed by the NRS and Wong Baker Faces Pain Rating Scale). A higher percentage of males (34%) experienced mild CLBP compared to females (22%). However, 26% of females were found to suffer from severe CLBP, as opposed to 12% of males, with a p-value of 0.014.

Conclusion: Patients with chronic low back pain often experience depression and report high levels of pain.

Keywords: Low Back Pain; Chronic Low Back Pain; Depression; PHQ-9 Scale; Numeric Rating Scale

INTRODUCTION

Chronic Low Back pain (CLBP) is one of the most common complaints with which patients come to visit medical OPD's.^{1,2} The 2013 Global Burden of Disease study reveals that chronic lower back pain is a significant contributor to the number of years people around the world spend living with a disability (YLDs).³ In 2017, the worldwide prevalence of low back pain was approximately 7.5%, affecting an estimated 577 million individuals.⁴ Chronic low back pain (CLBP) contributes to substantial disability and diminished quality of life. Both depression and anxiety are often linked to chronic pain. While CLBP is a physical condition, depression is a mental health concern. As individuals age, they become increasingly susceptible to experiencing back pain, which is a prevalent symptom from adolescence through old age. CLBP is characterized as pain persisting for over 12 weeks.⁵ Moreover, the impact of CLBP on elderly individuals is significant, and addressing this condition can prove to be a difficult task.⁶ Studies indicate that over one-third of older adults living in the community suffer from low back pain. This condition is one of the most debilitating and therapeutically

challenging issues affecting this age group.⁷ Chronic pain, encompassing CLBP, impacts approximately 25% to 76% of older adults living in the community and is the second leading cause of disability among all adult age groups. The prevalence of low back pain rises with age, and a considerable number of older individuals encounter chronic or recurring symptoms.⁸

Furthermore, low levels of vitamin D have been linked to substantial back pain in elderly women.⁹ Old age and being female are risk factors associated with chronic low back pain (CLBP).^{10,11} CLBP is linked to various social and psychiatric factors that elevate the risk of developing the condition. These factors include being female, lifting heavy objects in specific work environments, maintaining prolonged awkward postures, experiencing altered mental states, and suffering from depression.¹² This highlights the coexistence of chronic pain and depression. Persistent chronic low back pain can lead a patient to develop depression. However, it is not common practice to assess the mental health of such patients. It is crucial to understand how individuals respond to chronic pain and identify any coping strategies they may employ.¹² It is also known that

CLBP is a type of low back pain with more than three months duration, not related to any specific pathology.¹³ However, it is not well understood that whether one leads to other as many psychosocial factors remain unexplained as is the etiology of chronic low back pain remains unclear⁵. There are numerous aspects to consider when attempting to comprehend and treat chronic low back pain. Several factors can contribute to this condition, such as age (particularly in elder females) frequently lifting of heavy weights prolonged static postures and psychological factors such as anxiety and depression. Treating low back pain requires a multidimensional approach as it involves multiple disciplines of medicine namely physiotherapy, rehabilitation, neurological and orthopedic aspects. When anxiety and depression co-inhabit chronic low back pain and can alter the capacity to function both socially and physically. CLBP lowers the ability of patients to handle their pain and likewise affects the standard of living of these individuals. Emotions such as outrage, misery and impending gloom all encompasses to more deterioration of pain severity of CLBP. LBP has the property of recurrence bringing the patient frequently to the outpatient clinics. Chronic pain is one of the risk factors to develop depression.

Chronic low back pain (CLBP) and depression are two prevalent health concerns that often coexist. Several studies showed that pain and depression go together.¹⁴⁻¹⁷ Depression increases the risk of developing LBP¹⁸ and simultaneously affects one's mental health.¹⁹ This is not in routine to check the mental state of a patient with chronic low back pain. Therefore, a patient of CLBP can suffer from an episode of major depression, similarly any one with negative thoughts is likely to increase his pain intensity by over attention to the pain.²⁰ Those patients seeking help from medical care for their disability require a multidisciplinary approach to their condition. A single entity approach may fail

to relieve the patient completely of their pain. Therefore, this study will help the physicians to incorporate mental health fitness in their assessment of CLBP to improve overall well-being of patients to increase their standard of living. "This study investigates the relationship between depression and CLBP in patients at a Tertiary Care hospital in Karachi, Pakistan".

METHODOLOGY

This cross-sectional study took place at the Medical OPD of PN Shifa over three months, from June to August 2020. Non-probability convenience sampling was employed, and a total of 169 patients aged 20 years or older, suffering from chronic low back pain for ≥ 3 months, were included in the study. Patients with low back pain of ≤ 3 months duration, structural back deformities, past history of back surgery, or those affected by cancer, cardiac disease, chronic kidney disease, and systemic autoimmune diseases were excluded. Psychiatric patients with depression or anxiety were also excluded. Institutional ethical review committee approval (Ref No ERC 48/2019) was obtained for the study. After obtaining informed consent, the researcher administered a self-completed questionnaire containing patients' demographic information, along with depression and pain scales.

The Patient Health Questionnaire (PHQ-9) was used to evaluate depressive symptoms and their severity over the previous two weeks. Patients with a score of ≥ 10 (moderate depression on PHQ-9) were classified as having depression, while those with a score of ≤ 10 (mild depression on PHQ-9) were considered not to have depression in this study. The severity of low back pain was evaluated using the Numeric Rating Scale (NRS), which encompasses a range of scores from 0 (indicating no pain) to 10 (indicating the worst possible pain). The severity of Chronic Low Back Pain (CLBP) was classi-

fied into three categories: mild (0-3), moderate (4-6), and severe (7-10). The Wong Baker Faces Pain Rating Scale is a standardised pain assessment tool that utilizes a pictorial representation of facial expressions ranging from a contented expression at 0 (No Hurt) to a tearful countenance at 10 (indicating the most severe pain). The statistical analysis was conducted utilising the SPSS software for Windows, version 23.0. The presentation of continuous variables was in the form of mean and standard deviations, whereas categorical variables were exhibited as frequency and percentages.

The present study evaluated the reliability of the PHQ-9 and Wong Baker Faces Pain Rating Scale questionnaires through the application of Cronbach's alpha test, yielding a reliability statistics value of 0.862, indicating good strength. The Chi-square test was applied to compare categorical variables like low back pain and gender with the Wong Baker Faces Pain Rating Scale, NRS, or PHQ-9. One-way ANOVA was used to determine the significance between ages and low back pain. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

In this study, 169 patients participated, with a mean age of 61 years for those with moderate CLBP and 64 years for those with severe pain (p-value 0.000, Table 2). Patients with CLBP and no depression were still predominantly in the older age group of >45 years. Among patients with depression, 54% were married, while 25% lived without a partner (widowed). Most patients with depression had a secondary level of education (41%), as opposed to being graduates (27%). Additionally, 27% of patients did not study beyond primary education. A majority of patients (77%) with depression did not exercise, and 78% experienced disturbed sleep.

Table 1: Comparison of pain scales with different intensities of CLBP and comparison of phq-9 depression scale with different levels of CLBP.

Low back pain						
Wong-baker FACES pain rating scale		MILD (n=48)	MODERATE (n=97)	SEVERE (n=24)	Chi-square value	P-value
Hurts Little Bit		36	12	0	140.76	0.000
		75.00%	12.40%	0.00%		
Hurts Little More		12	36	1		
		25.00%	37.10%	4.20%		
Hurts Even More		0	33	3		
		0.00%	34.00%	12.50%		
Hurts Whole Lot		0	16	16		
		0.00%	16.50%	66.70%		
Hurts Worst		0	0	4		
		0.00%	0.00%	16.70%		
NRS	Moderate Pain	46	41	1	62.63	0.000
		95.80%	42.30%	4.20%		
	Worst Pain	2	56	23		
		4.20%	57.70%	95.80%		
PHQ 9	None	35	12	0	123.11	0.000
		72.90%	12.40%	0.00%		
	Mild	11	38	3		
		22.90%	39.20%	12.50%		
	Moderate	2	32	6		
		4.20%	33.00%	25.00%		
	Moderately Severe	0	15	8		
		0.00%	15.50%	33.30%		
	Severe	0	0	7		
		0.00%	0.00%	29.20%		

*Chi-square test was applied

Table 2: Comparison of age with Low Back Pain

Age with Low Back Pain				
LBP	N	Mean	Std. Deviation	P-value
None	47	45.47	12.08	0.000
Mild	52	50.6	14.21	
Moderate	40	61.75	13.00	
Moderately severe	23	62.7	8.81	
Severe	7	64	14.71	

*One way ANOVA test was applied

The duration of CLBP in patients presenting to the OPD was more frequently in months (53%) than in years (46%). Most patients were experiencing greater pain intensity during the week of presentation (55%). Of the CLBP patients, 64% used medication according to their doctors' prescriptions, and 54% were currently using NSAID pre-

scriptions. A significant number of CLBP patients (59%) also used over-the-counter (OTC) products for pain relief. A large portion of study participants (64%) did not use any herbal products for pain alleviation. Patients described their CLBP as either mild (28%) or moderate (57%) rather than severe (16%, Table 3).

Moderate to severe CLBP was associated with increased pain values on the Wong Baker Faces Pain Rating Scale and NRS (Table 3, p-value 0.000). Severe depression was more closely related to severe pain. According to the PHQ-9 scores, severe depression correlated with severe pain (p-value 0.000) and greater pain severity in the current and previous week. There were more males (34%) with mild CLBP compared to females (22%) with mild CLBP. However, a higher percentage of females (26%) experienced severe CLBP compared to males (12%, Table 2, p-value 0.014).

DISCUSSION

Our research findings indicate that patients with CLBP and depression experience higher pain levels compared to those without CLBP but without depression. This observation is consistent with the results from another study. Another piece of research has also demonstrated that individuals with depression tend to endure greater pain and a diminished quality of life in comparison to those who are not depressed.¹³

Several studies show that Depression and pain go together.⁽¹⁶⁻²⁰⁾ In our study most patients (57%) presented with Moderate LBP which is similar to a finding by stefane et al¹⁹ where Moderate LBP was present in most patients. This is in contrast to study by Frost et al²⁰ who had patients with LBP falling in the category of Mild to Moderate LBP. Therefore, a patient of CLBP experience a episode of major depression, and those with negative thoughts may increase their pain intensity by focusing too much on pain.²¹

In present study, there was a significant positive relation between age and LBP. Robertson et al²⁴ found that older age group patients suffered more of low back pain. Pawlowska et al²⁵ found out the presence of depression in 78% of CLBP patients in his study. In a Korean study, 20 % of CLBP pa-

Table 3: Comparison of Pain Rating Scales with Gender.

Low back pain					
Wong-baker FACES pain rating scale	Gender		Total	Chi-square value	P-value
	Male	Female			
Hurts Little Bit	29	19	48	12.57	0.014
	34.10%	22.60%	28.40%		
Hurts Little More	21	28	49		
	24.70%	33.30%	29.00%		
Hurts Even More	21	15	36		
	24.70%	17.90%	21.30%		
Hurts Whole Lot	10	22	32		
	11.80%	26.20%	18.90%		
Hurts Worst	4	0	4		
	4.70%	0.00%	2.40%		

*Chi-square test was applied

tients, showed depression.²⁶ Persistent CLBP increases the risks of developing depression which slows the recovery from LBP.

No depression (72%) was seen in (28%) of patients with Mild CLBP in our study. Many patients with Moderate (57%) and Severe (16%) CLBP had Moderate to Severe depression. This is proven by Hung et al²⁷ who found that depression contributes significantly with disability among patients with CLBP. Kakpovi et al²⁸ and Hiyama et al¹⁴ observed similar results in their studies that depression was significantly associated with CLBP. Hulsbusch et al¹⁷ did not find such an association between depression and pain severity. Major depression and old age decrease pain tolerance.¹⁴

In a previous study, CLBP had a prevalence higher in those aged 45-64 years.²⁹ It has been shown previously that (LBP) affects mostly middle aged patients³⁰ which is contradictory to our study where CLBP was more common in old age. In our study, majority (77%) patients with depression did not exercise. Research has shown that individuals with these conditions are less likely to engage in physical activity compared to those without them.³¹ This could be due to pain, fatigue and lack of motivation. Brosse et al in 2002 found that for people with depres-

sion to engage in regular exercise can help to improve mood, reduce pain and increase overall quality of life.³²

In our study, 78% of patients had disturbed sleep. Research has shown that sleep disturbance is a common and significant factor in both CLBP and depression.³³ Individuals with CLBP and depression commonly experience sleep disturbances, such as difficulty falling asleep and maintaining sleep.³⁴ As reported in our study, there was increased risk of CLBP in female gender as compared to males in one study.³⁵ A study³⁶ reported that education was negatively associated with CLBP, as education gives understanding of health conditions, therefore similar results were also found in our study too. CLBP patients suffer more from depression than normal individuals. Namgwawe et al found in a cross-sectional study that 39.5% of 114 CLBP patients had depression.³⁷ Similarly, Sribastav et al showed increased severity of depression in CLBP patients.³⁸

Our study was cross-sectional which is a limitation in our study. Therefore, we cannot generalize whether one leads to another or vice versa i-e as pain severity leads to depression, or whether depression leads to increased pain.

CONCLUSION

Patients with high pain scores were more depressed. Therefore, screening for depression in CLBP patients should be an important part of CLBP treatment therapy. Depression in CLBP patients is strongly influenced by pain intensity. Preventing and treating depression in CLBP patients selectively improves the treatment outcome of these patients.

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Author's Contribution

RS conceived the idea, designed the study, collected data, and was responsible for the manuscript's write-up. SUS provided valuable input by assisting in drafting the manuscript, ensuring intellectual rigor, and enhancing the content's quality. NS played a vital role in data collection and contributed significantly to the manuscript's final write-up. MFF expertise was instrumental in data analysis and interpretation, leading to a more robust and comprehensive understanding of the results. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.