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# Association of Chronic Low Back Pain with Depression and Anxiety

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## Abstract

**Background:** Chronic low back pain has a great impact on the mental health of an individual. In current practice in India the tolerant of chronic low back pain is seeking help either from orthopedic surgeon or a physiotherapist or traditional medicine and therefore the objective of all these systems mainly focuses on the alleviation of the physical symptoms and improvement of the functional performance. This study will provide a new insight to treating physician or physiotherapist who assess and manage the psychological component of health along with the physical health to achieve optimal health.

**Objective:** To assess the association of chronic low back pain with anxiety and depression.

**Methodology:** The present study aim to correlate chronic low back pain with depression and anxiety. The subjects participated were screened and were ruled out according to inclusion and exclusion criteria. The demographic data of the subjects was collected and they were also instructed to complete the NPRS (Numeric pain rating scale) and HADS (Hospital anxiety and depression scale).

**Results:** The result of the study showed significant positive correlation of low back pain with depression ( $p < 0.002$  value) and non-significant correlation with anxiety.

**Conclusion:** The present study demonstrates correlation of chronic low back pain with depression and no significant result with anxiety. Patients with chronic low back pain are more prone to depression than anxiety. While planning treatment protocol psychological component should be taken into account and treatment should be planned accordingly to get better results.

**Keywords:** Chronic low back pain; Depression; Anxiety; Numeric pain rating scale; Hospital anxiety; Depression scale

## Introduction

Chronic low back ache is the leading reason behind mental and physical disability. It is a typical musculoskeletal issue with up to 80% of individual reporting of low back ache over their lifetime [1]. It is a multidimensional problem [2]. Events of low back pain increases with age and occurs commonly among old females, lifting massive weights, and extended static posture, psychosocial factors such as apprehension, depression and mental pressure are found to be correlated with low back pain. These measurements comprise path anatomical, neurophysiological, physical and psycho social factors [3]. It's a big clinical, social, monetary, and general medical issue influencing everybody. Low back pain is related to significant incapacity and negative financial effect related to diminish work efficiency, non-attendance, and expanded medical insurance usage [4]. Pain is additionally chance factor for melancholy, and various investigations have analyzed the co-occasion of pain and depression. The comorbidity is clinically entrenched however the elemental instruments don't seem to be surely known. A Constant low back ache specifically is frequently co-horrible with depression, a fundamental driver of disability round the world. Chronic low back pain is influenced by the patient's psychological condition no matter that, the psychological condition of most chronic low back pain patients isn't routinely surveyed. In this manner, in chronic pain, psychosocial hazard factor become pertinent, and are imperative to elucidate how people react to back pain. Current studies have shown that psychosocial factors are significant hazard components for Low back pain [5]. Anxiety and depression regularly co-occur in patients with chronic low back pain, and hamper their capacity to function, both socially and physically. This additionally disarranges the capacity of patients to control their pain and thus also affects the standard of living of individuals with degenerative diseases of the lower back. Feelings, for instance, outrage, misery, fractiousness, and dread, has been seen as a hazard factor for more noteworthy pain severity in chronic low back pain, expanded inability, and more terrible results after treatment including epidural steroid infusion and lumbar medical procedure. Psychological problems are usually reported in chronic low back pain and, in turn such distress is connected to poor outcomes including

higher healthcare social insurance usage. Interestingly, feelings related with positive influence are well-recognized (e.g., excitement, hopefulness, imperativeness, commitment, alertness) and related with benefits that are repeatedly reported across numerous [6].

Presently the patients stricken by chronic low back pain are mainly seeking help from the physicians or orthopedic surgeons for relieved of pain. It has become challenge for both orthopedic surgeons and physiotherapists to provide treatment and may fail to provide relieve to the patients. This study will help the health care workers to incorporate mental health in their assessment to get overall well-being of the patients and enhance their quality of life.

## Research Methodology

This was the correlational study which was conducted with the sample size of 80 subjects was calculated with the use of G\* Power pre diagnosed with chronic low back pain. Subjects were recruited from Department of Orthopedics, Jamia Hamdard and Rehabilitation center, Department of Rehabilitation Sciences, Jamia Hamdard, and New Delhi. Subjects with age group of 20-65 were included in the study. The method of sample of convenience was used to select and include patients according to the diagnosis and known history of low back pain for quite three months, pain localized to the anatomic zone below the rear ribs and above the lower margins of the gluteus. Patients with history of cardiac diseases, metabolic disorders, respiratory conditions like asthma and COPD, severe mental trauma in last six month, socioeconomic losses and physical trauma were excluded because these conditions have an extra effect on the physical, mental and social status of the patient. Before signing of the informed consent the patients were explained well about the study and after that they signed the informed consent and asked for the demographic details and they were also instructed to complete the NPRS and HADS. The HADS is a 14-thing poll, appraised on a 4- point ordinal scale, which was intended to quantify passionate pain in non-psychiatric tolerant population. The internal consistency, as assessed by Cronbach's alpha, was 0.90 for the complete scale, 0.84 for depression subscale and 0.85 for the anxiety subscale. The NPRS is a one-dimensional measure of pain strength in adults, also of those with constant pain. The 11-point numeric scale ranges from '0' representing no pain at all to '10' representing most exceedingly terrible pain. The score for both the NPRS and HADS were recorded. The ethical committee of Jamia Hamdard has signed the study and promoted to record data of the patients involved in the study.

## Statistical analysis

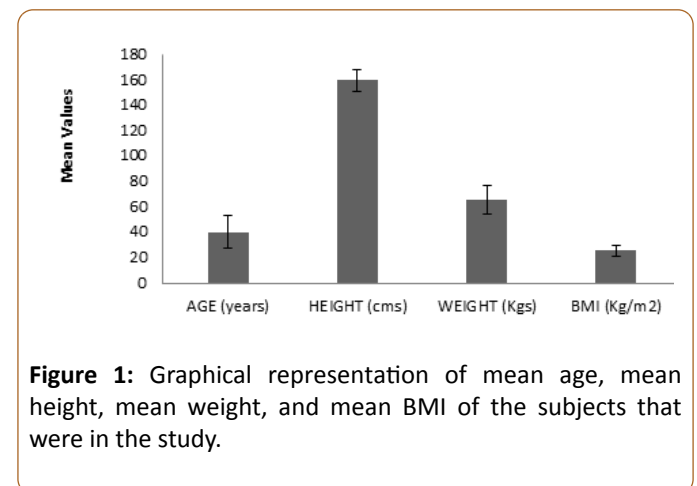
The statistical data was analyzed by using SPSS version 21.00 and the statistical test used was Karl Pearson Correlational coefficient test (r) to find correlation of chronic low back pain with anxiety and depression.

## Results

Total 80 subjects were included in the study and data was collected. A total of 39 males and 41 females were recruited for the study (**Table 1 and Figure 1**).

**Table 1:** Shows the mean age, mean height, mean weight and mean BMI of the subjects that were included in the study.

0	Mean (S.D)
Age (years)	40.56 (13.6)
Height (cm)	159.892 (8.5)
Weight (kg)	65.773 (10.7)
BMI (kg/m <sup>2</sup> )	25.741 (4.2)

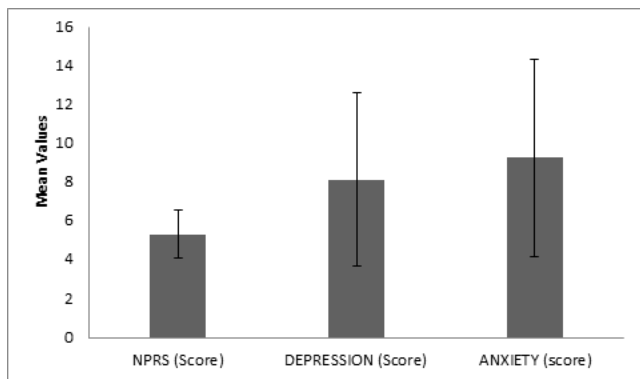


**Figure 1:** Graphical representation of mean age, mean height, mean weight, and mean BMI of the subjects that were in the study.

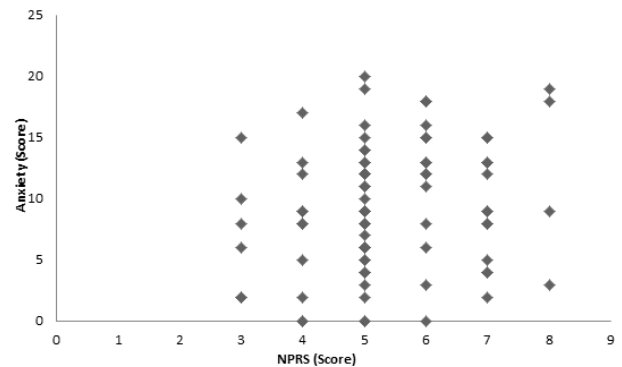
The mean values of NPRS, depression and anxiety were 5.34+1.230, 8.15+4.487 cm, 9.27+5.107 respectively (**Table 2 and Figure 2**).

**Table 2:** Shows mean NPRS (score), Mean Depression (score) and Anxiety (score).

Variables	Mean (S.D)
NPRS (Score)	5.34 (1.2)
Depression (Score)	8.15 (4.4)
Anxiety (score)	9.27 (5.7)



**Figure 2:** Graphical representation of mean NPRS (score), Mean Depression (score) and Anxiety (score) of the subjects that were recruited in the study.



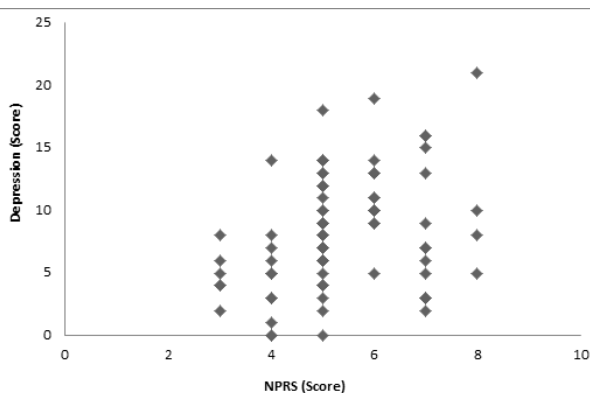
**Figure 4:** Graphical representation of relationship of pain with anxiety.

Correlation of Pain with depression and anxiety mentioned in **Table 3** and **Figures 3 and 4** respectively. Significant result was found between NPRS and depression as value were considered significant if p value <0.05.

Non-significant result was found on the analysis of NPRS and anxiety level of the recruited subjects.

**Table 3:** Showing correlation of pain with depression and anxiety level of the recruited subjects in the present study.

Variables		Depression	Anxiety
NPRS	Pearson Correlation	0.32**	0.15
	p value	0.002	0.07



**Figure 3:** Graphical representation of correlation of pain with depression.

## Discussion

The present study aimed to find out correlation between chronic low back pain with anxiety and depression. The result of the study showed significant positive correlation of low back pain with depression ( $p < 0.002$  value) and non-significant correlation with anxiety. The significant positive correlation with depression could be clarified by the researches that have taken place in the past and present studies. The source available has shown the same result but the mechanism is still unknown. The longer the historic background of the problem, the foremost noteworthy the hindrance the extra distinguished the quantity of depression to be anticipated [7]. These different degrees of capacity have been coordinated by frameworks, seeing pain and depression as having reciprocal psychological effects [8]. Pain hastens stress while depression hinders patients' capacities to deal with pain. The joined activity of chronic pain and depression may instigate dynamic disintegration, negative effect, diminished vitality, disturbed sleep and decreased social job execution may eventually advance to significant disability and depression. There is diminished action levels and reduce in salary levels and disruption in family connections. Interpersonal and mental conflicts become bound up within the pain complaint, which at that points seems to be profoundly impervious to change [9]. Mental distress and withdrawal from routine are interrelated highlights of helpless adjustments to disease. This connection among distress and disability could be a general maladaptive reaction saw in physical diseases apart from that causing pain [10]. Although a great part of the pain-depression relationship might be because of general ailment processes not specific to pain, pain also has effects on appearance and course of mental distress. Particularly, pain may actuate or fuel low vitality, rest unsettling influence and anxiety. Given the large burden of human enduring that happens when pain and mental diseases coexist, there is a squeezing need to comprehend the transaction of pain and mental illness. There are previous researches which are in accordance with the result of the findings of current research as stated by Kroenke, et al. [11] there is higher possibility of mental stress and physical impairment with patients having physical symptoms; they

studied 1000 adult primary care clinic patients. One of the review concluded that there is deeper connection between pain and depression as the neurotransmitter serotonin and norepinephrine are responsible for both [12]. Melkevik et al. conducted study on Danish female health care workers sample size of 6572 founded that 18% of them have moderate level of depressive symptoms whereas 10% have severe level of symptoms and 88% of them have multiple pain sites [13]. A recent research which was published in 2020 focused on inter-relationship between mental health and pain it consist of three groups 76 patients of Chronic Regional pain syndrome (CRPS) 95 other type of chronic pain and 66 major depressive disorder patient and the result suggest that patient of CRPS suffer from depression, anxiety but their mechanism differ from those of patient with major depressive disorder [14]. The present research may assist better understanding of the mental and social mechanisms of both chronic pain and psychological illness among medical patients. This research is anticipated to supply a logical premise for avoidance of the comorbidity of pain dysfunction and depression, and to expand the possibilities of full compensation of function and emotional health among those unfortunate individuals tormented by both pain and depression. Pains often accompany with symptoms of depression and anxiety but due to limited research on their correlation no account of mental status taken care of during treatment period. In present study, significant result was found between NPRS and Depression and non-significant result was found between NPRS and anxiety. This study will help to plan assessment which include mental domain and the treatment should include mental aspect to achieve overall well-being and enhance quality of life.

Furthermore there were some limitations of the present study. Social and economic aspect of the population was not studied in this study. There is a need of studying the effect of back pain among male and female separately. It should be separately tested on different age group population also. Social and economic aspect should also be taken into account. Longitudinal studies are required by using more variables related to mental health.

## Conclusion

The result of current study show significant result of chronic low back pain with depression whereas non-significant result with anxiety. The treating physician/orthopedics/physiotherapist also include the mental domain while assessing patient with chronic low back pain so optimal

management strategy could be plan in order to provide a comprehensive management of the chronic low back pain patients. The inclusion of mental health during the assessment of patient will help health care worker to reinforce the standard of life.

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