

## Does Chronic Facet Pain Cause Depression in Rural Indian Population?

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### Abstract

**Background:** Chronic pain and major depression commonly occur together. Major depression in patients with chronic pain is associated with decreased function, poorer treatment response and increased health care costs.

**Purpose of the study:** To estimate the prevalence of depression in persons with chronic facet pain and correlation of depression with Pain intensity and age.

**Method:** Cross sectional Questionnaire based study. Total 80 subjects with chronic low back pain were included in the study. Out of which 40 were with diagnosis of facet pain in lumbar region and 40 with chronic low back pain of any other cause. Patients were assessed using 'Patient Health Questionnaire 9' (PHQ-9) and Visual analogue scale.

**Result:** High prevalence (78.75%) of depression among chronic pain patients without any difference in chronic facet pain and chronic low back pain of any origin, there was strong relation between pain severity and depression ( $r=0.86$ ).

**Conclusion:** Our study revealed a high prevalence of depression amongst patients with chronic facet pain and chronic low back pain of any origin.

**Keywords:** Chronic facet Pain; Depression

### Introduction

Among all the chronic pain disorders, pain from various structures of the lumbar spine constitutes the majority of problems. The lifetime prevalence of low back pain has been reported as high as 80% [1-7]. Modern evidence differ chronic persistent low back pain in 25% to 75% of patients, 1 to 5 years after the initial episode [8-18]. Kuslich et al. [18] identified intervertebral discs, ligaments, fascia, muscles, nerve root dura, and facet joints as tissues capable of transmitting pain in the low back. Facet joint pain, discogenic pain, and sacroiliac joint pain have been proven to be common causes of chronic low back pain by using reliable diagnostic techniques [19-24]. Based on the responses to controlled diagnostic blocks, in accordance with the criteria established by the International Association for the Study of Pain [25], zygapophysial (facet joints) have been implicated as the source of chronic pain in 15% to 45% of patients with chronic low back pain [26-31]. The facet, or zygapophysial, joints of the lumbar spine have been shown to be capable of causing pain in the low back with referred pain to the lower extremity in normal volunteers [32-35]. They also have been shown to be a source of pain in patients with chronic low back pain using diagnostic techniques of known reliability and validity [1].

Chronic pain and depression are frequently comorbid [36]. Presence of depression in a patient with chronic pain is associated with decreased function, [36] poorer treatment response [37,38] and increased health care costs [39].

Bill Fordyce states: *"the longer the history of the problem and the greater the interference in the premorbid behavioural repertoire, the greater the deprivation of reinforcement and the greater the amount of depression to be expected."*

According to studies 2 to 4% of persons in the community, 5-10% of primary care patients, and 10-14% of medical inpatients suffer from major depression [40]. Studies done in primary care set up in India, however, have estimated the prevalence rate of depression as high as 21-40.45% [41]. Co-occurrence of pain and depression is common [36,42]. Depression is more prevalent in chronic pain patients (CPPs) than in the general population as a consequence of the presence of chronic pain [43-45].

To our knowledge the prevalence of depression in Indian population with chronic facet pain is not well studied. The objective of this study was to estimate prevalence of depression in persons with chronic facet pain compared with people with chronic low back pain of any origin.

### Materials and Methodology

The study population consisted of 80 consecutive patients with a chief complaint of chronic low back pain of facet origin and any other origin. This prospective cross sectional study was conducted at Pad. Dr. Vitthalrao Vikhe Patil Foundation, Ahmednagar between Dec -2012 to Jan -2013. Written informed consent was obtained from the patients. Patients with low back pain with duration more than 6 months, pain located in facet region, MRI finding with facet arthropathy, Pain not worsed by forward flexion or extension, no centralization phenomenon and pain radiating into the hip, buttocks and down the back or the side of the upper leg were included in facet group and second group consisted of patients with chronic low back pain with any other origin.

Subjects unwilling to participate and on antidepressants or on chronic medication due to other psychiatric disorder were also excluded from the study.

Depression was assessed by the depression module of the 'Patient Health Questionnaire' (PHQ), a self-administered version of the mental disorder assessing tool 'PRIME-MD', called the 'Patient Health Questionnaire 9' (PHQ-9) depression scale [36,46,47]. A preformed questionnaires comprising nine items, each of which is scored 0 to

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3, and thus providing a severity score ranging between 0 to 27, was given to the patients suffering from chronic pain [36]. The scores 0, 1, 2, and 3, are assigned to the response categories of “not at all”, “several days”, “more than half the days”, and “nearly every day” respectively. The response categories are based upon the frequency of a particular symptom over the last two weeks. The severity of depression was assessed by PHQ-9 depression severity score (DSS) and graded as none/minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19) severe (20-27).

All participants completed the PHQ-9 as part of the standard assessment procedure at the clinic. Interviews took place in a private room at the clinic. At the beginning of the interview, participants were reminded that they could terminate the interview at any time and refuse to answer questions. Intensity of pain was assessed using Visual Analogue scale (10 cm) and duration of pain was recorded in months.

Score of PHQ-9 for chronic facet patients were compared with patients with chronic low back pain (Figure 1). Pearson correlation coefficient value (r) was used to check the correlation between VAS, age and depression.

## Results

**Table 1: Demographic data**

There were a total of 40 patients comprising 12 female (30%) and 28 male (70%) patients in chronic facet pain group and 16 female (40%) and 24 male (60%) in chronic low back pain group. The average age of the patients was 49.4 and 51.2 years respectively with a range of 32 to 55 years. The average duration of symptoms was 31.6 months and 32.2 months respectively in both the groups (Table 1).

**Table 2: Patient characteristics among different depression severity groups**

Patients were divided into groups on the basis of score according to PHQ-9 scale. It was found that among chronic facet pain patients (n=40), 09 patients (22.5%) had no/minimal depression (score 0-4), 17 patients (42.5%) had mild depression (score 5-9), 6 patients (15 %) had moderate depression (score 10-14), 03 (7.5%) patients had moderately severe depression (score 15-19), and 05 patients (12.5%) had severe depression (score 20-27) (Table 2).

It was found that among patients with chronic low back pain (n=40), 08 patients (20%) had no/minimal depression (score 0-4), 15 patients (37.5%) had mild depression (score 5-9), 8 patients (20%) had moderate depression (score 10-14), 04 (10%) patients had moderately

Number of Patients		Patients with chronic facet pain N=40	Patients without chronic facet pain N=40
Gender	Male	28 (70%)	24 (60%)
	Female	12 (30%)	16 (40%)
Mean Age (years)		49.4	51.2
Mean Duration of Pain (Months)		31.6	32.2
Mean VAS score		7.22	6.42

**Table 1: Demographic Data.**

Severity of Depression	Sex	Chronic Facet joint Pain Patients			Chronic Low Back Pain pain		
		No. Of Cases	Avg. PHQ 9 Score	Avg. VAS	No. Of Cases	Avg. Score	Avg. VAS
Minimal	Male	06	1.22	5.34	04	1.32	5.16
	Female	03	1.20	6.20	04	1.24	5.58
Mild	Male	11	6.34	6.12	10	6.84	6.24
	Female	06	6.46	6.18	05	6.24	6.22
Moderate	Male	05	11.54	6.42	05	11.94	6.54
	Female	01	11.84	7.24	03	11.52	7.10
Moderately severe	Male	02	17.23	7.54	02	18.22	7.88
	Female	01	17.42	7.86	02	17.56	7.78
Severe	Male	04	23.11	7.22	03	22.46	7.34
	Female	01	22.34	7.42	02	22.31	7.32

**Table 2: Patient characteristics among different depression severity groups.**

severe depression (score 15-19), and 05 patients (12.5%) had severe depression (score 20-27).

The association of VAS score with PHQ -9 score was assessed using ‘Pearson correlation coefficient value (r)’ and was found 0.86. This shows strong relation between pain severity and depression (Chart 1 and 2).

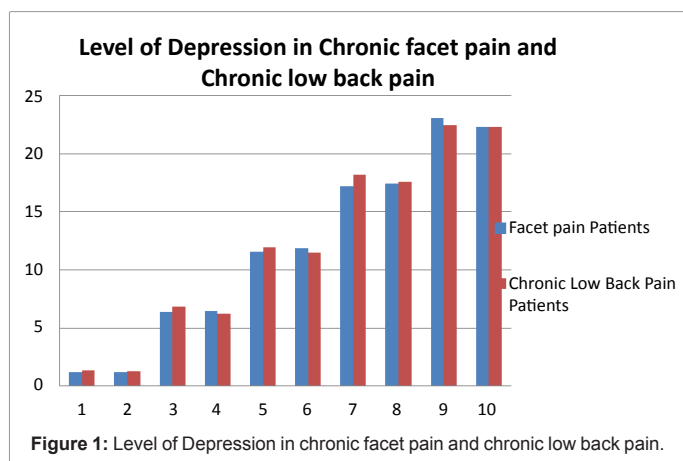
The association of age with PHQ-9 score was assessed using ‘Pearson correlation coefficient value (r)’ and was found -0.068. This shows no relation between age and depression.

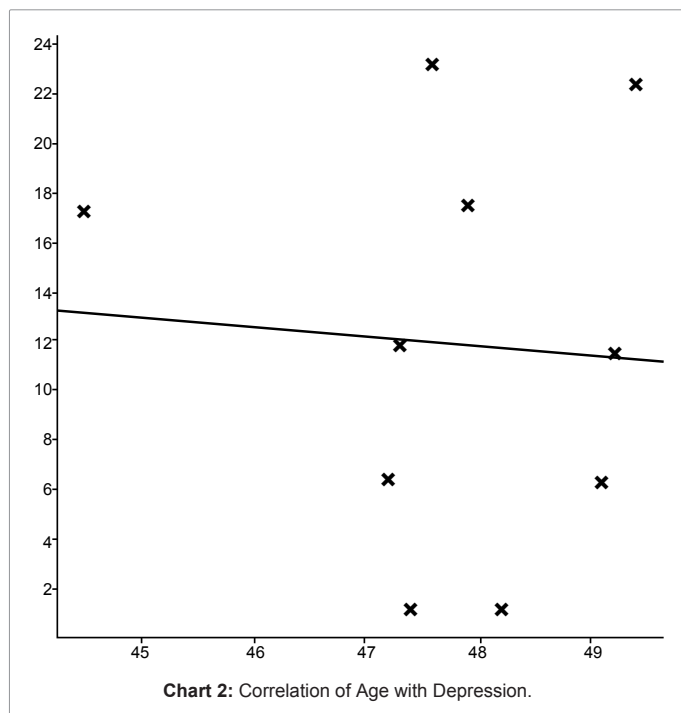
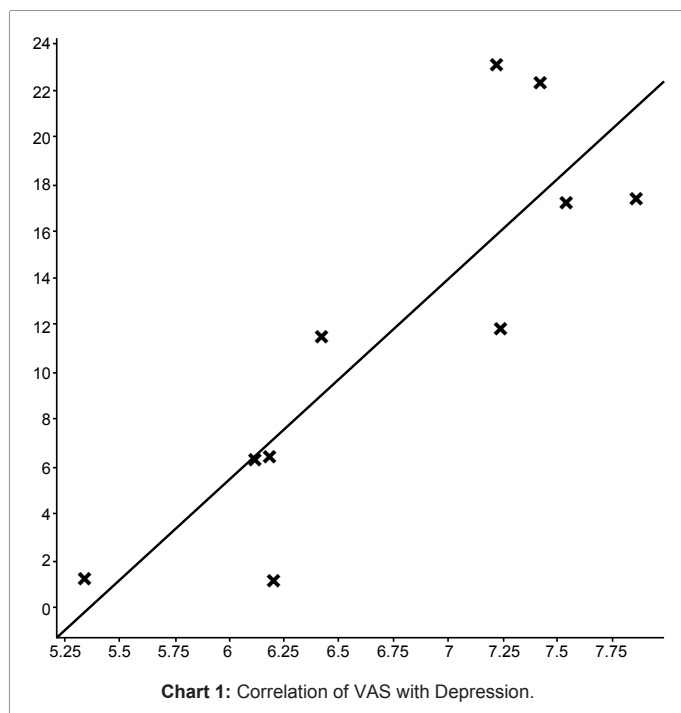
On comparison of PHQ-9 score between two groups it was found there is no difference between two groups regarding intensity of depression.

## Discussion

An individual’s response to chronic pain reflects characteristics of the pain and the person’s thoughts and behavior developed during the course of the illness, which are subject to positive and negative reinforcement [11]. The daily challenges of chronic pain that are commonly described include decreased enjoyment of normal activities, loss of function, role change and relationship difficulties [8]. Uncertainty, about ever being pain-free or the possibility of worsening pain are accompanied by feelings of anxiety, sadness, grief and anger. For some people, the burden of pain is difficult to manage and may lead to the emergence of a mental disorder like depression.

Our study revealed high prevalence (78.75%) of depression among chronic pain patients without any difference in chronic facet pain and chronic low back pain of any origin. The prevalence of major depression among chronic pain patients differs according to the study settings. Bair et al. reviewed the literatures on prevalence rate of major depression among chronic pain patients and found the prevalence rate to be varying within a wide range of 1.5% to 100% which included studies from pain clinic, psychiatric clinic, orthopedic clinic, dental clinic, gynecologic clinic, surgical patients and primary care settings [36]. They found the mean prevalence rate of major depression in





chronic pain patients from pain clinics to be 52% which included 15 studies.

From the results of our study it is evident that intensity of pain rather than duration of pain are responsible for development of depression in chronic pain patients.

A common theory postulates that depression and painful symptoms follow the same descending pathways of the central nervous system. The most completely described pain modulating circuit includes the amygdala, periaqueductal gray, dorsolateral pontine

tegmentum and rostral-ventromedial medulla in the brainstem [47]. Through descending projections, this circuit controls both spinal and trigeminal dorsal horn pain transmission neurons. Several different neurotransmitters such as serotonin and norepinephrine are involved in the modulatory actions of this circuit, which exerts bi-directional control of pain through ‘On cells’ that facilitate and ‘Off cells’ that inhibit dorsal horn nociceptive neurons [48]. With depletion of serotonin and norepinephrine, as occurs in depression, this system may lose its modulatory effect such that minor signals from the body are amplified, and more attention and emotion are focused on them. This explains the multiple pain symptoms in patients with depression, and frequent association of pain with increased attention, focus and negative affect. Antidepressants, belonging to tricyclic antidepressants such as amitriptyline, imipramine and selective serotonin-norepinephrine reuptake inhibitors such as duloxetine, venlafaxine were shown to alleviate some forms of chronic pain [49]. They increase the availability of serotonin and norepinephrine by inhibiting their reuptake and thereby increasing their levels in key brain areas they modulate pain signals. This pathophysiological correlation explains the frequent coexistence of major depression and chronic pain [50].

The success of treatment for chronic pain not only depends on application of modern therapies including interventional pain management but also depends on early detection of chronic musculoskeletal diseases and its timely intervention and referral to psychiatrist if necessary, because both chronic pain and major depression affects each other in a vicious way [51].

So it is important for physiotherapist to be aware of the high prevalence of reported symptoms of depression among patients with chronic back pain and needs to consider applying a management program with components that address the psychological aspects of the perception of chronic low back pain. All appropriate patients need to be reassured and given information that explains why they need to become active participants in their treatment. Primary aim of Management should not be reduction of pain or coping with pain, but changing of negative perceptions and improving coping behavior.

## Conclusion

Our study revealed a high prevalence of depression among patients with chronic facet pain and chronic low back pain of any origin. Hence we suggest for better prognosis of such patients routine psychological assessment along with routine assessment should be done to exclude the presence of depression. Chronic pain management team should include Physiotherapist, anesthesiologist, psychologists and orthopedic surgeon for better tomorrow for patients with chronic pain and depression.

## Implications

- Illustrates the need for physiotherapist to be aware of screening for depression in their patient population.
- Physiotherapy practitioners should be knowledgeable about screening and management of depression especially in chronic pain of any origin.

## Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

## Authors’ Contributions

Deepak B Anap, Keerthi Rao and Subhash Khatri originally

discussed the importance of this topic and agreed that it needed to be studied in a systematic fashion. DA and KR designed the protocol, recruited patients and collected data. DA drafted the manuscript, which all authors discussed, revised, and finally agreed upon.

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