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ORIGINAL ARTICLE

Comparison of the frequency of psychiatric disorders among patients with chronic low back pain and control group

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ABSTRACT

Background: Low back pain (LBP) is one of the most common complaints of patients referred to the clinics. Studies indicated that psychosocial factors have great impact on the patients' complaints and disability. The aim of this study was to evaluate a broad range of psychiatric disorders in patients with chronic LBP (CLBP) and compare them with those of the control group.

Patients and Methods: We applied Symptom Checklist 90-R to compare 50 CLBP patients in the case group with 100 participants without it in the control group. The questionnaire measured somatization, obsessive-compulsive disorder, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism.

Results: Average "global severity index" was 1.10 in the case and 0.5 in the control group. Average "positive symptom total" was 45.26 in the case and 27.41 in the control group. Average "positive symptom distress index" was 2.50 in the case and 1.50 in the control group. Average scores for all test dimensions were significantly different between the two groups ($P = 0.00$).

Conclusions: All dimensions were significantly more common in CLBP patients. Therefore, early diagnosis and treatment of these disorders may improve the outcome of CLBP.

Key words: Chronic low back pain, psychiatric disorders, Symptom Checklist 90-R

Introduction

Low back pain (LBP) is one of the most prevalent chronic pain problems among patients. It is a leading cause of disability in the USA. It has a significant economic impact not only on lost productivity but also on healthcare expenditure. Approximately one-fifth of patients will see multiple physicians in their quest for relief of LBP. In the UK, 9% of adults consult their doctor annually because of back pain. Initial treatment for LBP frequently occurs in primary care settings. The treatment recommendations are based on orthopedic teaching, but this management is causing increased dissatisfaction. Although most patients presenting with LBP in primary care improve significantly over the next few months, a minority have persistent, high-intensity pain that can interfere with daily activities. If persons at high risk for chronic back pain could be identified during their initial primary care visits, treatment could be tailored to the level of individual risk.[1-3]

Few patients have serious medical pathology or direct neurologic involvement requiring surgery. Although the causes remain unclear, physical stress and its consequences on intervertebral discs, facet joints, and supporting soft tissues at work or leisure are important and are sometimes aggravated by adverse psychosocial factors. Epidemiological research

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has shown that LBP is connected to individual, physical, and psychosocial risk factors. In addition, recent studies have indicated that health beliefs and culture have an impact on musculoskeletal complaints and the relevant disability.[2,4]

Studies where diagnostic interviews have been applied to evaluate psychiatric comorbidity in chronic LBP (CLBP) show the high prevalence varying from 41% to 99% consistently. The most common disorders are somatoform disorders, affective disorders, and substance abuse disorders with major depression as the most common single diagnosis. Psychiatric disorders are also significantly more prevalent in those reporting CLBP compared to those without it in the general population. A wide range of different questionnaires has been used to assess psychopathology in CLBP patients by self-report.[5,6]

Our review of the literature indicated that few investigations have been done to assess the frequency of psychiatric disorders in CLBP patients. Therefore, we decided to evaluate a wide range of psychiatric disorders in these patients and compare them with a control group.

Patients and Methods

This was a cross-sectional case-control study which included 50 patients with CLBP referred to the outpatient neurosurgery clinic of Ghaem Hospital of Mashhad University of Medical Sciences (MUMS), Mashhad, Iran during a 2-year period (2013–2015) who also met our inclusion criteria as the case group. All our CLBP patients underwent Magnetic resonance imaging (MRI) scan and those with abnormal MRI findings were excluded from the study. Therefore, all patients in this study were negative for any pathological cause of LBP based on MRI. We also studied a control group consisting of 100 participants without LBP who were selected from staff and university students at MUMS.

Our inclusion criteria were:

- Age between 15 and 70 years
- Severity of LBP to a level which made the patient visit a doctor
- LBP duration of more than 3 months
- LBP being the patient's main and chief complaint.

The exclusion criteria were:

- Age under 15 or over 70 years
- LBP duration of less than 3 months
- Presence of psychotic disorders leading to hospital admission
- Presence of congenital spinal anomalies
- Presence of major chronic medical conditions (such as chronic obstructive pulmonary disease, diabetes, and cardiovascular diseases)
- Mental retardation
- Presence of major cerebral diseases (such as epilepsy and cerebral vascular accident)
- History of surgery in recent year
- History of consuming drugs with certain psychiatric side effects (such as methyldopa, cimetidine, and corticosteroids)
- LBP associated with neoplastic, infectious, or inflammatory causes, pregnancy, or spinal trauma
- Radiculopathy or neural compression on MRI.

All participants in both groups filled out Symptom Checklist 90-R (SCL-90-R) Questionnaire under the supervision of a psychiatry resident who also explained the questions for them.

SCL-90-R is a widely applied 90-item self-assessment questionnaire for a broad range of mental disorders that assesses the subjective symptom burden in patients with mental disorders. The items in this questionnaire refer to the severity of psychological symptoms during the past week. Each item of the SCL-90-R is rated on a 5-point (0–4) scale of distress ranging from not-at-all to extremely. Although the SCL-90-R is not disorder-based, the symptoms cluster along nine symptom dimensions including somatization, obsessive-compulsive disorder, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism. Elevated scores on each of the subscales indicate possible psychopathology. It takes approximately 15–20 min to complete.[7,8] The dimensional structure of the SCL-90-R is demonstrated in Table 1.[8]

Participants were asked to include their gender and age on questionnaires but not their first/last names. They were reassured that their test results would be kept strictly confidential.

Interpretation of the SCL-90-R focuses on both the total score (with a higher score showing more severe psychopathology) and the subscale scores. In depression, average score of above 3 shows severe depression with psychotic features. Moreover, there are three global indices which can be calculated from

Table 1: Dimensional structure of SCL-90-R

Dimension	Number of items	Item position in the SCL-90-R
Somatization	12	1, 4, 12, 27, 40, 42, 48, 49, 52, 53, 56, 58
Obsessive compulsive	10	3, 9, 10, 28, 38, 45, 46, 51, 55, 65
Interpersonal sensitivity	9	6, 21, 34, 36, 37, 41, 61, 69, 73
Depression	13	5, 14, 15, 20, 22, 26, 29, 30, 31, 32, 54, 71, 79
Anxiety	10	2, 17, 23, 33, 39, 57, 72, 78, 80, 86
Hostility	6	11, 24, 63, 67, 74, 81
Phobic anxiety	7	13, 25, 47, 50, 70, 75, 82
Paranoid ideation	6	8, 18, 43, 68, 76, 83
Psychoticism	10	7, 16, 35, 62, 77, 84, 85, 87, 88, 90
Additional items	7	19, 44, 59, 60, 64, 66, 89

SCL-90-R – Symptom Checklist 90-R

the raw scores on the questionnaire: (1) The global severity index (GSI), a weighted frequency score based on the sum of the ratings the patient has assigned to each symptom; (2) the positive symptom total (PST), a frequency count of the number of symptoms the patient has reported; and (3) the positive symptom distress index (PSDI), a score reflecting the intensity of distress corrected for the number of symptoms endorsed.[7-9]

The data obtained were coded and analyzed using SPSS 11.5 Windows (©SPSS Inc., Chicago, IL, USA). The value of significant difference was set at $P < 0.05$.

Results

We studied 50 patients in the case group and 100 patients in the control group. Using Chi-square test, there was no significant difference in gender between case and control groups ($P = 0.54$).

The mean age was 41/36 ± 13/40 years (16–70 years) in the case group and 31/85 ± 12/72 years (19–66 years) in the control group. Mann–Whitney test showed that there was a significant age difference between case and control groups ($P = 0.00$). So, standard multivariate regression analysis was done to adjust age between the two groups.

The average scores for each psychiatric disorder in both case and control groups and also the results of regression analysis for all nine dimensions measured in SCL-90-R Questionnaire are shown in Table 2.

The average scores of all 9 symptom dimensions including somatization, obsessive-compulsive disorder, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism were higher in CLBP patients compared to the control group and the differences were significant statistically ($P < 0.05$).

The average global indices were also calculated from the raw scores on the questionnaire and compared between case and control groups. Results are shown in Table 3. All average indices including GSI, PST, and PSDI were higher in CLBP patients compared to the control group, and the differences were statistically significant ($P < 0.05$).

Table 2: Results of statistical analysis of all symptom dimensions of SCL-90-R Questionnaire in both case and control groups

Dimensions	Groups	Mean±SD	*t*	*P*
Somatization	Case	1.33±0.88	7.04	0.00
	Control	0.52±0.54		
Obsessive-compulsive	Case	1.33±0.88	4.34	0.00
	Control	0.52±0.54		
Interpersonal sensitivity	Case	1.03±0.83	4.42	0.00
	Control	0.51±0.57		
Depression	Case	1.37±0.90	5.34	0.00
	Control	0.64±0.68		
Anxiety	Case	1.04±0.85	5.10	0.00
	Control	0.49±0.53		
Hostility	Case	1.04±0.88	5.07	0.00
	Control	0.47±0.50		
Phobic anxiety	Case	0.56±0.59	4.50	0.00
	Control	0.20±0.36		
Paranoid ideation	Case	1.13±0.99	3.06	0.00
	Control	0.68±0.69		
Psychoticism	Case	0.78±0.74	5.15	0.00
	Control	0.29±0.40		

SD – Standard deviation; SCL-90-R – Symptom Checklist 90-R

Table 3: Comparison of average global indices between case and control groups

Indices	Groups	Mean±SD	*t*	*P*
GSI*	Case	1.10±0.73	5.99	0.00
	Control	0.50±0.47		
PST**	Case	45.26±2.28	5.26	0.00
	Control	27.41±1.96		
PSDI***	Case	2.50±0.56	6.06	0.00
	Control	1.50±0.42		

*GSI – Global severity index; **PST – Positive symptom total; ***PSDI – Positive symptom distress index; SD – Standard deviation

Discussion

LBP is a common condition that affects a large portion of the population. Although experienced by the majority, the complaints endure and disable in a minority. CLBP is a condition where biological, psychological, and social factors interact and mutually influence each other, both as causal factors and in maintaining the complaints.

In this study, we applied SCL-90-R Questionnaire to discover the frequencies of a broad range of psychiatric disorders in case and control groups. According to several studies, the scales on this test function well for use as a case-finding instrument.[1,10,11]

The results of the present study indicate that our CLBP patient group had statistically significantly more psychiatric disorders of all dimensions – compared to the participants without CLBP. These psychiatric disorders including somatization, obsessive-compulsive disorder, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism may have played a role in the onset, severity, exacerbation, or maintenance of the pain.

Some of these dimensions were reported to be more prevalent in CLBP patients in previous studies: A study by Bener *et al*. which was conducted in 13 primary healthcare centers throughout Qatar showed that somatization and depression disorder were significantly more common in LBP patients when compared to their healthy counterparts.[12]

In a study by Halla *et al*., depression and stress symptoms but not anxiety were responsible for mediation of the pain-disability relationship.[13]

The analysis of several other studies showed that patients with LBP scored significantly higher on depression.[14-16]

In a study by Korff *et al*., anxiety followed by somatization and then depression had the highest correlation with LBP.[17]

A research carried out in Australia stated that depression was the highest in patients with LBP.[18]

One study by Mirzamani-bafghi *et al*. showed results which were similar to ours. The study was conducted in Tehran, Iran, and included 112 subjects with LBP in comparison with 56 subjects without LBP. A *t*-test that was used to investigate a possible significant difference in SCL-90-R scale between the two groups indicated significant difference in all scales except the interpersonal sensitivity scale.[2]

In a study by Zarghami *et al*. which was conducted in Mazandaran, Iran, there were two groups of patients: One group included 56 LBP patients without any clinical signs and the other one consisted of 56 LBP patients with radiculopathy. In the group without clinical signs, psychiatric disorders including somatization, obsessive-compulsive disorder, depression, anxiety, hostility, phobic anxiety, interpersonal sensitivity, paranoid ideation, and psychoticism were significantly higher.[19]

Our findings suggest that Iranian CLBP patients have an increased occurrence of coexistent psychological disorder, as has been shown in other chronic pain patient populations.[5,20]

This study cannot distinguish any causal relationship; however, chronic pain is often associated with physical and psychological co-morbid features which may confound this relationship.[21]

The mind-body interaction is complex. There is increasing scientific evidence indicating that mind-body interactions are at the root of health and disease. Research has shown that psychological factors play a role in the onset and course of many chronic disorders, and that psychological, emotional, behavioral, and psychosocial interventions have at least as much proof of effectiveness as many medical treatments.[22]

Theory and research have consistently underestimated the importance of psychosocial factors in the onset, severity, and chronicity of LBP.[21]

This study utilized a novel approach to measuring psychological factors in CLBP patients, and the results of this study may be of use for healthcare providers. Considering the higher prevalence of psychiatric disorders in CLBP patients, early diagnosis and treatment of these disorders may improve the outcome of chronic pain and might decrease the relevant disability.

Conclusion

In general, this study showed that all psychiatric disorders assessed by SCL-90-R Questionnaire including somatization, obsessive-compulsive disorder, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism were significantly more common in patients with CLBP compared to the control group. Therefore, if persons at high risk for chronic back pain-due to their psychiatric disorders-could be identified early in the course of the disease, treatment could be tailored to the level of individual risk. Early management of these disorders may also improve the outcome of LBP and might cut the costs related to lost workdays and compensation claims.

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Conflicts of interest

There are no conflicts of interest.

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