

## ORIGINAL ARTICLE

# PSYCHOLOGICAL ASPECTS OF LOW BACK PAIN

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**Background** – Chronic low back pain is a complex condition produced by multiple factors. This study investigated the psychological aspects of low back pain in a group of patients.

**Methods** – A total of 112 subjects participated in the study. Fifty-six patients (21 females and 35 males) had low back pain and were seeking treatment in two clinics. A control group of 56 subjects (20 females and 36 males) without low back pain agreed to participate in the study as a control group. Psychological aspects were evaluated by the Persian version of Symptoms Checklist-90-Revised (SCL-90-R). Information on relevant demographics and pain was collected by one of the investigators who created the questionnaire.

**Results** – The patients had higher scores in all scales of the SCL-90-R. A *t*-test which was used to investigate a possible significant difference in SCL-90-R scale between the groups indicated significant difference in all scales but the interpersonal sensitive scale.

**Conclusion** – These findings indicate that chronic low back pain patients have an increased occurrence of coexistent psychological distress.

**Keywords** • anxiety • depression • low back pain • mental health

### Introduction

In the Diagnostic and Statistical Manual of Mental Disorders 4<sup>th</sup> ed (DSM-IV), pain disorder has been classified under somatoform disorders. The essential feature of pain disorder is pain that is the predominant focus of the clinical presentation and is of sufficient severity to warrant clinical attention (Criterion A).<sup>1</sup> Back pain is prevalent worldwide and back pain disability has reached epidemic proportions in many industrialized societies. Low back pain, a leading cause of disability in the USA, has a significant economic impact not only on lost productivity but also on health care expenditure. Approximately one-fifth of patients will see multiple physicians in their quest for relief of low back pain.<sup>2</sup>

In the UK, 9% of adults consult their doctor annually because of back pain. The treatment recommendations are based on orthopedic teaching, but this management is causing increasing dissatisfaction. Consistent findings of a systematic review showed that bed rest is not an

effective treatment for acute low back pain, and may even delay recovery.<sup>3</sup> 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. Chronic low back pain is a complex condition produced by multiple factors. Psychological disturbances have been found in previous studies using a variety of psychological tests.<sup>4-7</sup> A review of the literature on psychosocial factors associated with disabling low back pain concluded that the distress may aggravate the pain and thus the disability.<sup>8</sup>

The relationship between chronic low back pain and scores on depression was examined in a sample of 31 veterans who completed a depression inventory. The analysis indicated that those with chronic low back pain scored significantly higher on depression than those without.<sup>9</sup>

Our review of the literature indicated an association between psychological aspects and development of chronic pain. However, this

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## Psychological Aspects of Low Back Pain

problem has received little attention in Iran. Therefore, in the current study we aimed at investigating the psychological aspects of low back pain in a group of Iranian low back pain patients.

### Patients and Methods

#### Participants

During a 12-month period (October 2001 to September 2002), a total of 112 subjects participated in this study. Fifty-six low back pain patients (21 females and 35 males) who had low back pain disorder and were seeking treatment in two clinical settings (neurosurgery or orthopedics) of Baghiyatollah Hospital, Tehran, agreed to participate in the study. Diagnosis of low back pain was made by the second and third authors. The patients' age ranged from 15 to 70 years (mean, 36.5 years; SD, 9.82) and most (85.7%) were living with their spouse. At the time of the initial interview, all patients were taking some form of pain medication. A control group of 56 subjects (20 females and 36 males) who had no low back pain disorder were selected from staff and university students at Baghiyatollah University of Medical Sciences, Tehran, who agreed to participate in the study. The control group subjects' age also ranged from 15 to 70 years (mean, 34.29; SD, 9.47) and most (82.1%) were living with their spouse. The age difference between these two groups was not significant. Demographic characteristics of the participants are provided in Table 1.

#### Instruments

Psychological aspects of the participants were evaluated by the Symptoms Checklist-90-Revised (SCL-90-R). SCL-90,<sup>10, 11</sup> is a 90-item self-report symptom inventory designed to reflect the psychological symptom patterns of community, medical, and psychiatric respondents. The SCL-90-R items are as follows: anxiety, hostility, somatization, obsessive-compulsive, depression, paranoid ideation, interpersonal sensitivity, psychoticism, and phobic anxiety. The SCL-90-R has adequate psychometric properties, with

satisfactory internal consistency ranging from a low of 0.77 for psychoticism to a high of 0.90 for depression, while test-retest coefficients ranges from 0.68 for somatization to 0.83 for paranoid disorder.<sup>12</sup> The revised SCL-90 was translated from English into Persian and standardized by Mirzai.<sup>13</sup> Her research yielded results that are consistent with those from the USA with regard to comparisons of reliability measures of concurrent validity, discriminate validity and construct validity. The Persian SCL-90-R has adequate psychometric properties, with satisfactory internal consistency ranging from 0.77 for psychoticism to 0.90 for depression, and test-retest coefficients ranged from 0.80 for somatization to 0.90 for paranoid disorder.<sup>13</sup>

Information on relevant demographics and pain were collected by an investigator who created the questionnaire. This questionnaire included a series of questions such as demographic information, date of pain onset, psychological problems, relation between psychological problems and the pain, as well as negative life events.

#### Procedure

Potential participants were introduced by the second and third authors to the first author. For those who agreed to participate, information on relevant demographics and pain was collected. In addition, participants completed an individual information sheet, an informed consent, and the SCL-90-R. Data were analyzed by SPSS 9 and using the *t*-test.

### Results

As shown in Table 2, the low back pain patients had higher scores in all scales of SCL-90-R (excluding the interpersonal sensitive scale). *T*-tests indicated significance between group differences in all scales tested ( $p < 0.001$ ).

In this study, 46.4% of patients had anxiety disorder, and 48.2% of patients had a depressive disorder (cut-off point to diagnose a disorder was one).

Analysis on information of relevant demogra-

**Table 1.** Demographic characteristics of the study participants.

| Group   | Sex (n) |        | Marital status (n) |        |         | Age (yr) |      |
|---------|---------|--------|--------------------|--------|---------|----------|------|
|         | Male    | Female | Married            | Single | Widowed | Mean     | SD   |
| Pain    | 35      | 21     | 48                 | 7      | 1       | 36.5     | 9.82 |
| Control | 36      | 20     | 48                 | 7      | 1       | 34.29    | 9.47 |

**Table 2.** Results of *t*-test analysis of Symptoms Checklist-90-Revised (SCL-90-R) scale scores between the two study groups (*n* = 56 for both groups).

| Scale                | Group   | df    | Mean score | SD   | <i>p</i> Value |
|----------------------|---------|-------|------------|------|----------------|
| Anxiety              | Control | 110   | 0.31       | 0.38 | < 0.0001       |
|                      | Pain    | 72.95 | 1.16       | 0.93 |                |
| Hostility            | Control | 110   | 0.41       | 0.47 | < 0.0001       |
|                      | Pain    | 77.14 | 1.43       | 1.02 |                |
| Somatization         | Control | 110   | 0.28       | 0.27 | < 0.0001       |
|                      | Pain    | 65.16 | 1.4        | 0.88 |                |
| Obsessive-compulsive | Control | 110   | 0.72       | 0.42 | < 0.0001       |
|                      | Pain    | 78.99 | 1.35       | 0.87 |                |
| Paranoid ideation    | Control | 110   | 0.66       | 0.45 | < 0.0001       |
|                      | Pain    | 79.45 | 1.31       | 0.93 |                |
| Psychoticism         | Control | 110   | 0.29       | 0.31 | < 0.0001       |
|                      | Pain    | 73.69 | 0.93       | 0.75 |                |
| Phobic anxiety       | Control | 110   | 0.23       | 0.27 | < 0.0001       |
|                      | Pain    | 68.21 | 0.66       | 0.77 |                |

phics and pain indicated the following:

1. seventy five percent of low back pain patients believed that there was a relationship between their pain and their psychological problem;
2. fifty-three point five percent of low back pain patients stated that their psychological problem started before their pain;
3. thirty percent of low back pain patients believed that, in fact, their psychological problem was the cause of their pain; and
4. thirty-six point one percent of low back pain patients experienced at least one negative life event during the year prior to the present study.

## Discussion

The results of the present study indicate that the low back pain patient group had more anxiety. This difference was significant. Also, 46.4% of the patient group in this study had diagnosed anxiety disorder. A majority (58%) of the patient group stated that their psychological problem started before their pain. Therefore, anxiety may have played a role in the onset, severity, exacerbation, or maintenance of the pain. These results are in agreement with those of previous studies.<sup>7,8</sup>

The results of the present study also indicated that the patients were statistically significantly more depressed than their healthy counterparts. Depression, like anxiety, may occur after a stressful episode and is a common feature of chronic pain.<sup>9</sup> Our study group also experienced

significantly more hostility than the control subjects.

Overall, these findings suggest that Iranian chronic low back pain patients have an increased occurrence of coexistent psychological distress, as has been shown in other chronic pain patient populations. This study cannot distinguish any causal relationship, however, chronic pain is often associated with physical and psychological comorbid features which may confound this relationship.<sup>8</sup> The findings also suggest that pain can have a substantial negative impact on quality of life and that psychological distress is common in patients with chronic pain. Some of these explanations consider the psychological disorder to be a result of physical disease. With regard to the possible explanations for the relationship between somatic disease and psychological complaints, our results are in support of the possibility that psychological distress is manifested by physical symptoms.

The mind-body interaction is especially complex. There is an increasing and compelling body of scientific evidence indicating that mind-body interactions are at the root of both health and disease. Research has demonstrated that psychological factors play a causal role in the onset and course of many chronic disorders, and that psychological, emotional, psychosocial, and behavioral interventions have at least as much proof of effectiveness as many purely medical treatments.<sup>14</sup> There is a substantial growing body of scientific and clinical knowledge which

## Psychological Aspects of Low Back Pain

demonstrates an inextricable interaction between mind and body. Such an approach empowers individuals and organizations to assume greater responsibility for health as a basis for the development of a true health care system.<sup>14</sup>

Theory and research have consistently underscored the importance of accounting for both biomedical and psychosocial variables in predicting patient response to chronic pain intervention.<sup>8</sup>

Although no causal path can be deduced from our findings, this study utilized a novel approach to measuring psychological factors in back pain in reference to healthcare utilization. The results indicate that treatment of chronic low back pain at the biochemical level is not enough. Psychotherapy may be useful when used together with biochemical treatment. Like most studies in this field, ours was limited in that it was very difficult to match the two study groups in all sociodemographic characters.

In summary, it can be concluded that low back pain patients experienced more psychological problem than the control group; hence, low back pain may be associated with psychological problems. Psychological factors may play an important role in the onset, severity, exacerbation, or maintenance of this type of chronic pain.

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