

# AN INDEX OF DEPRESSION IN PATIENTS WITH CHRONIC NONSPECIFIC MUSCULOSKELETAL PAIN

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**Background:** The present study was undertaken to derive an index of depression in patients with chronic non-specific musculoskeletal pain and to determine correlation between these two parameters. **Method:** The study was carried out at the Shaikh Zayed Hospital Lahore from November 2001 to May 2002 and included 36 patients with pain for at least 4-24 weeks duration; an equal number of healthy people acted as controls. Depression was assessed among subjects by administering the General Health Questionnaire (GHQ) to patients and controls and obtaining their GHQ scores. Pain assessment was performed in patients by scoring the total number of pain sites on digital palpation to provide a Total Pain Score (TPS). **Results:** Patients differed significantly from controls in their GHQ scores (patients  $20.47 \pm 7.19$ , controls  $3.11 \pm 1.89$  respectively,  $p < 0.001$ ). The GHQ score and the TPS score correlated significantly in patients ( $r = 0.517$ ,  $p = 0.001$ ). **Conclusions:** Patients with chronic non-specific musculoskeletal pain suffer from significant levels of depression, in direct correlation to their pain.

**Key Words:** Depression, Chronic pain, Musculoskeletal pain

## INTRODUCTION

Depression may exist as a disease entity by itself<sup>1</sup> or serve to complicate the disease spectrum of an already existing chronic illness; it is commonly found in patients in association with a variety of chronic infectious, metabolic, neoplastic and genetic illnesses.<sup>2-6</sup> Perhaps the most common type of depression is the one found in association with old age<sup>7-9</sup>, pregnancy<sup>10-12</sup> and the post partum period in women.<sup>13-15</sup> Several studies have even documented the role of depression as a primary or additional risk factor for subsequent occurrence of diseases.<sup>16-18</sup> As a comorbid factor present in the diseased state, it increases the disease burden of the patient and incurs increased costs for health care.<sup>19-25</sup>

The association of depression with chronic illnesses has been a subject of research for many years, without any clear cut plausible pathogenetic mechanism being elucidated. Some authors favour a psychosomatic origin for depression, terming it merely a depressed mental state of the patient who is aware of the presence of a chronic disease in the body;<sup>26,27</sup> others try to find biochemical and neuronal pathways linking the presence of depression in chronic disease to specific organic lesions or pathways in the brain.<sup>28,29</sup>

One of the associations found more significantly with depression is that of the presence of pain.<sup>30-32</sup> Though some studies have claimed the presence of chronic fatigue and pain as a consequence of depression in patients suffering from various states of chronic mental depression,<sup>33</sup> it has also been found that states of chronic pain (of whatever origin) by themselves bring about depression in patients.<sup>31,34,35</sup> Pain mediated depression has been linked to the findings of raised serum cortisol and other corticoids<sup>36</sup> and also to cytokine mediators such as TNF-alpha.<sup>37-39</sup> However the probable biological plausibility is still to be worked out.

## MATERIAL AND METHODS

The study was carried out at Shaikh Zayed Hospital, Lahore from November 2001 to May 2002. A total of 72 subjects of both sexes and age groups between 25 to 60 years, comprising 36 patients with nonspecific pain and 36 normal healthy controls were included in the study.

Patients with musculoskeletal pain of at least 4-24 weeks duration were included in the study group after excluding people with history of injury, diabetes mellitus, renal disease, chronic infection, neoplastic condition or any other systemic disease, known cases of arthritic diseases and subjects testing positive for rheumatoid arthritis factor, ANA, ASOT, with raised levels of CPK, LDH, ALAT, AST, BUN, Creatinine, Glucose, and ESR. Detailed history was taken on prescribed Proforma assessing the patients' disease status and history of musculoskeletal pain.

History was taken on prescribed proforma assessing the patient's status and history of musculoskeletal pain and depression.

Physical examination of the subject was carried out for height, weight, temperature, blood pressure, anaemia, joint swelling, localization of pain, deformity and functional disability.

Documentation for pain was accomplished by the Tender Point Scoring System derived by palpation of nine tender points in the muscles, joints and other localities. The 18-point sites (unilateral, bilateral) on palpation were used to derive the Tender Points Score (TPS) for each patient complaining of chronic non-specific musculo-skeletal pain.<sup>41</sup>

For assessing the presence of depression a General Health Questionnaire (GHQ) for depression was filled; a cut-off point >5 score for 28 items was taken to diagnose the accompanying depression.<sup>40</sup>

All data were entered on SPSS version 8.0 software and were analyzed for frequencies, means and SD; Chi-Square and Student's t-test were used for hypothesis testing. Pearson's Correlation Coefficient (*r*) was used to determine numerical associations.  $P \leq 0.05$  was maintained as significant.

## RESULTS

Of the 72 study subjects, 22 (30.6%) were males and 50 (69.4%) were females, giving a male to female ratio of 1:2.36. There were 12 (33.3%) males and 24 (66.7%) females among controls and 10 males (27.8%) and 26 females (72.2%) among patients. The ages of subjects ranged from 25 to 60 years with a mean age of  $38.08 \pm 8.24$  years. The ages of 36 controls ranged from 25 to 54 years with a mean age of  $38.64 \pm 6.74$  years. The ages of 36 patients ranged from 25 to 60 years with a mean age of  $37.53 \pm 9.57$  years (Table 1).

Table 1: The age characteristics of controls, patients and all subjects by gender.

Groups	Age Range (years)	Mean Age (years)
Controls (36)	25 – 54	$38.64 \pm 6.74$
Males (12)	29 - 54	$39.92 \pm 6.91$
Females (24)	25 - 52	$38.00 \pm 6.70$
Patients (36)	25 – 60	$37.53 \pm 9.57$
Males (10)	25 - 60	$36.40 \pm 11.32$
Females (26)	25 - 55	$37.96 \pm 9.03$
All Subjects (72)	25 – 60	$38.08 \pm 8.24$
Males (22)	25 - 60	$38.32 \pm 9.12$
Females (50)	25 - 55	$37.98 \pm 7.92$

Pain duration in patients ranged from 4 to 24 weeks, with a mean duration of  $16.17 \pm 7.07$  weeks. The total pain score ranged from 3 to 18, with a mean score of  $9.63 \pm 4.25$  (Table 2).

The GHQ scores of 36 controls ranged from 0 to 8, with a mean score of  $3.11 \pm 1.89$ . The GHQ scores of 36 patients ranged from 9 to 31, with a mean score of  $20.47 \pm 7.19$  (Table 2). This difference was highly significant with  $p < 0.001$ .

Table 2: Pain characteristics and depression index in subjects.

Variables	Range	Means $\pm$ S.D.
Duration of pain (weeks)	4 – 24	$16.17 \pm 7.07$
Total Pain Score	3 – 18	$9.63 \pm 4.25$
GHQ Score		
Controls (36)	0 - 8	$3.11 \pm 1.89$
Patients (36)	9 – 31	$20.47 \pm 7.19^*$

\*  $p < 0.001$  as compared to controls

Correlation analysis revealed a significant positive linear association between the TPS and the GHQ scores in patients, with  $r = 0.517$  and  $p = 0.001$  (Figure 1). In the control group, no graph could be generated as there were an insufficient number of cases for correlation analysis.

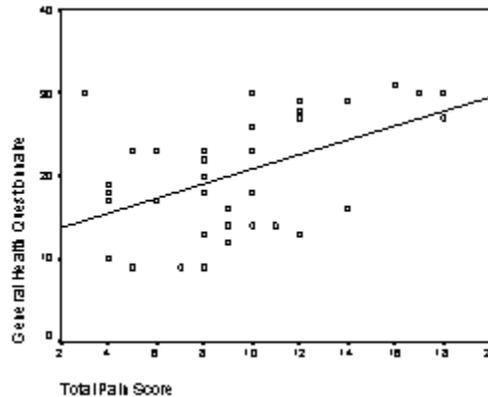


Figure 1: Scattergram of patients' TPS and GHQ scores showing a positive linear association which is significant with  $r = 0.517$  and  $p = 0.001$ .

## DISCUSSION

Our patients tended to fit into the category of chronic non-specific pain as defined by ISAP<sup>42</sup> and belonged to an adult age group; they had all other common causes of chronic pain excluded by relevant investigations.

The present study revealed a significant difference between patients of chronic pain and normal subjects when tested by an index, the General Health Questionnaire, used to monitor the level of depression in people (Table 2).

When analysed further, the data indicated a significant positive linear correlation between the patients' GHQ scores and their Total Pain Scores (TPS), indicating that the increased depression found in patients with chronic pain was related to the magnitude of pain present in their bodies. Such correlation could not be performed in controls as there were an insufficient number of cases to correlate.

Pain mediated depression warrants recognition in the general population as well as in patients undergoing treatment for a variety of chronic painful conditions.<sup>35</sup> Once depression ensues, it further mediates a cycle of depression -based enhanced pain perception, so that the psychosomatic component serves to maintain feelings of

pain despite routine pain medication.<sup>43</sup> A vicious cycle thus ensues that not only requires greater pain medication and longer treatment times, but may defy total pain resolution unless the depression is recognized and treated as well.<sup>30,32</sup>

Several studies have pointed out that both chronic pain syndromes and depression exist more commonly in females.<sup>44, 45</sup> This is seen also in the present study, where the number of female patients with pain (26, 72.2%) is more than twice the number of male patients (10, 27.8%); however the mean GHQ scores of male and female patients did not differ significantly.

To conclude, the presence of depression must be sought for actively in patients suffering from chronic non-specific painful conditions, so that the additional psychosomatic or neurochemical mechanisms that maintain a cycle of persistent pain in these patients can be recognized and treated appropriately.

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