A Comparison of Fear-Avoidance Beliefs in Patients With Lumbar Spine Pain and Cervical Spine Pain

Steven Z. George, MS, PT,* Julie M. Fritz, PhD, PT, ATC,* and Richard E. Erhard, DC, PT†

The Fear Avoidance Model of Exaggerated Pain Perception was developed by Lethem et al16,23 to help explain why some individuals with acute painful conditions progress to chronic pain whereas others are able to recover. The model proposes that pain perceptions have both a sensory component and an emotional reaction component. Under normal conditions, these two components have a synchronous and proportional relation. In some instances, however, the relation between the sensory component and the emotional reaction component can become dissociated, resulting in exaggerated pain perceptions or “pain experience and/or pain behavior which is out of proportion to demonstrable organic pathology.”16,23 The Fear Avoidance Model proposes that the most important determinant of the relation between the sensory and emotional components of pain perceptions is the individual’s fear of pain and subsequent avoidance behavior.16,23

Four factors are hypothesized to determine an individual’s fear of pain: stressful life events, personality, previous pain history, and normal pain coping strategy.16,22,23 The interaction among these components determines how an individual responds to painful stimuli. This response may fall somewhere along a continuum between two extremes: avoidance and confrontation.16,23 Confrontation is seen as an adaptive response in which the individual resumes activities in a graded manner, eventually returning to a normal level of activity. Avoidance is viewed as a maladaptive response in which activities anticipated to cause pain are avoided. Avoidance may result in the development of exaggerated pain perceptions, continued disability, and adverse psychological consequences.16,23

An avoidance response to LBP has been associated with an increased risk of prolonged disability and work loss in patients with chronic LBP.7,14,28,29 Waddell et al129 developed the Fear Avoidance Beliefs Questionnaire (FABQ) to quantify fear-avoidance beliefs in patients with LBP. The questionnaire is designed to assess the impact of fear-avoidance beliefs on two aspects of function: physical activity and work. Waddell et al29 reported that the FABQ could measure fear-avoidance beliefs in a reliable and valid manner. In addition, after controlling for pain intensity and location, fear-avoidance beliefs about work explained a substantial amount of variance in disability and work loss in patients with chronic LBP.29 For patients with chronic LBP, subsequent studies have reinforced that fear-avoidance beliefs can be measured in a reliable and valid manner and are better correlated with disability than pain intensity scores.1,5,27

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Recent evidence suggests that psychosocial factors are an important variable in predicting patients who progress from acute to chronic low back pain (LBP).14,17 Several studies have demonstrated a superior ability of psychosocial factors over physical variables in predicting future disability in patients with LBP.4,9,14 Fear-avoidance beliefs have been hypothesized as the most important and specific psychosocial factor in predicting disability among patients with LBP.5,14,28

Summary of Background Data. Fear-avoidance beliefs are a specific psychosocial variable involved in the development of disability from low back pain. Psychosocial variables are believed to play a role in cervical disability, but specific variables have not been investigated.

Methods. Consecutive patients referred to a multidisciplinary center completed self-reports of disability, pain intensity, and fear-avoidance beliefs during an initial evaluation session. Gender, type of symptom onset, acuity, and payer source were also recorded. Associations between disability, pain intensity, and fear-avoidance beliefs were investigated in patients with cervical spine pain and patients with lumbar spine pain.

Results. In all, 163 patients completed the self-reports and were included in this study. Weaker relations between fear-avoidance beliefs and disability were found in patients with cervical pain than in those with lumbar pain. Significant differences in fear-avoidance beliefs were found for gender, type of symptom onset, and payer source (workers’ compensation, auto insurance, and traditional insurance).

Conclusion. The associations among fear-avoidance beliefs, pain intensity, and disability differed between patients with cervical spine pain and patients with lumbar spine pain. Fear-avoidance beliefs were significantly different in subgroups of patients. [Key words: fear avoidance, beliefs, disability, cervical spine, lumbar spine]

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These findings strengthen the contention that the “fear of pain and what we do about it may be more disabling than pain itself.”

Although the Fear Avoidance Model has been studied more extensively in patients with LBP, and the FABQ was developed for patients with LBP, there is some evidence that fear-avoidance beliefs may play a similar role in other patient populations. Rose et al. compared components of fear-avoidance beliefs in recovered patients and patients with chronic pain from postherpetic neuralgia, reflex sympathetic dystrophy, and LBP. Significant differences were observed in the components of fear-avoidance beliefs between patients who had recovered and those whose condition persisted. These findings indicate that fear-avoidance beliefs may be an important factor of recovery in a wide range of painful conditions.

Similarly to LBP, cervical pain is a prevalent condition, prone to chronicity and frequently resulting in prolonged disability and lost work productivity. The relation between psychosocial factors and disability in patients with chronic cervical pain has not been studied as extensively as in patients with LBP. A few studies have demonstrated that psychosocial factors at work are risk factors for the development of new episodes of neck pain. In another study, patients with chronic neck pain from whiplash injury demonstrated a psychological profile characteristic of patients with chronic pain, including high somatization, obsessive-compulsive, and depression scores. This profile did not fit a particular psychiatric diagnosis, but was reported to be similar to depression scores. This profile did not fit a particular psychiatric diagnosis, but was reported to be similar to depression scores.

Leclerc et al. found that in a working population, psychological distress and psychosomatic problems were associated with chronic neck disorders and were predictive factors for neck disorders. The questionnaire used in that study contained various psychological, psychosomatic, and sleep disorder components. The identification of specific variables predictive of chronic neck disorders was not possible. Previous studies on the role of psychosocial variables in the prediction of chronicity caused by cervical pain have mostly focused on working populations and have not yet identified specific factors of importance. The identification of specific factors may facilitate the development of treatment strategies to reduce the likelihood of the development of chronic cervical pain.

Fear-avoidance beliefs are known to be an important variable in predicting chronic LBP and are believed to be present in a wide range of patients with chronic pain conditions. Previous studies have not investigated the relation between specific psychosocial variables and chronic cervical pain and disability. For these reasons, an investigation of fear-avoidance beliefs, pain, and disability in cervical patients was warranted. The purposes of this study were to examine the association between fear-avoidance beliefs, pain, and disability in a sample of patients with cervical pain and to compare fear-avoidance beliefs, pain, and disability in patients with cervical spine pain and patients with lumbar spine pain.

**Methods**

**Subjects.** The participants in this study were consecutive new referrals evaluated at an academic medical center’s multidisciplinary spine clinic over a 12 months. The subjects were either self-referred or referred by another medical specialist with a diagnosis involving the cervical or lumbar spine. Subjects were defined as having cervical spine pain, thoracic spine pain, lumbar spine pain, or multiple areas of spine pain (i.e., cervical and lumbar spine pain) based on the admitting diagnosis. If the admitting diagnosis included more than one region of the spine, the subject’s data were included with the region for which a higher disability score was obtained. As part of the initial examination, all subjects completed a series of questionnaires that included measures of disability, pain, and fear-avoidance beliefs. Subjects were not included in the data analysis if the clinician determined the subject’s symptoms were likely of nonspinal origin.

**Measures.** The following measures were obtained at the initial evaluation:

- **Demographic Data.** The patient’s age, gender, and region of spine pain were recorded. Payer source was recorded as 1) workers’ compensation, 2) automobile insurance, or 3) other insurance plan (Medicare, health maintenance organizations, and traditional indemnity plans).
- **Disability.** Patients referred with lumbar region pain completed a Modified Oswestry Low Back Disability Questionnaire (OSW). Patients referred with cervical region pain completed a Neck Disability Index (NDI). Both the NDI and the OSW contain 10 items, each scored from 0 to 5, and the final score is expressed as a percent score (range, 0–100). A higher percent indicates a greater amount of disability.
- **Pain.** Pain intensity was measured on a 10-point ordinal scale ranging between 0 (no pain) and 10 (maximum pain). The patient completed the pain intensity measure by indicating the present level of pain, the best level of pain, and the worst level of pain over the previous 24 hours. The sum of the three pain intensities was recorded (range, 0–30).

The number of days between the onset of symptoms and the initial evaluation was recorded. Then, acuity was recorded as a dichotomous variable: 1) acute, defined as duration of symptoms for 1 month or less; or 2) chronic, defined as duration of symptoms longer than 1 month. The nature of the onset of symptoms was determined from the patient’s history and recorded as a dichotomous variable, either 1) sudden onset of symptoms, defined as a definite onset date or a traumatic onset of symptoms; or 2) gradual onset of symptoms, defined as a lack of a definite onset date or insidious onset of symptoms.

**Fear-Avoidance Beliefs.** Each patient completed the Fear-Avoidance Behavior Questionnaire (FABQ). The FABQ is a 16-item questionnaire with each item scored from 0 to 6 and higher numbers indicating increased levels of fear-avoidance beliefs. Two subscales within the FABQ have been identified: a 4-item scale measuring fear-avoidance beliefs about physical activity (FABQ-PA) and a 7-item scale assessing fear-avoidance beliefs about work (FABQ-W). The FABQ-PA has a possible range of 0 to 24, and the FABQ-W has a range of 0 to 42. The questions of the FABQ refer to “back pain” and not to LBP. Therefore, the phrasing of the FABQ was not altered for patients with cervical spine pain. Patients with cervical pain com-
Table 1. Characteristics of Patients in the Study

<table>
<thead>
<tr>
<th></th>
<th>Cervical (n = 59)</th>
<th>Lumbar (n = 104)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (SD)</td>
<td>39.6 (10.8)</td>
<td>44.8 (15.1)</td>
<td>0.013</td>
</tr>
<tr>
<td>Gender (% female)</td>
<td>66.1</td>
<td>58.7</td>
<td>0.35</td>
</tr>
<tr>
<td>Onset time (% acute)</td>
<td>10.2</td>
<td>27.9</td>
<td>0.008</td>
</tr>
<tr>
<td>Payer source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers’ compensation (%)</td>
<td>22.0</td>
<td>16.5</td>
<td>0.11</td>
</tr>
<tr>
<td>Automobile insurance (%)</td>
<td>20.3</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Disability score (SD)</td>
<td>34.0 (13.0)</td>
<td>40.4 (16.8)</td>
<td>0.008</td>
</tr>
<tr>
<td>Sum of pain intensity score (SD)</td>
<td>14.4 (4.7)</td>
<td>14.7 (6.8)</td>
<td>0.76</td>
</tr>
<tr>
<td>FABQ-PA (SD)</td>
<td>14.2 (6.9)</td>
<td>16.1 (5.7)</td>
<td>0.06</td>
</tr>
<tr>
<td>FABQ-W (SD)</td>
<td>14.5 (10.0)</td>
<td>17.3 (12.4)</td>
<td>0.17</td>
</tr>
</tbody>
</table>

FABQ-PA = Fear-Avoidance Behavior Questionnaire—physical activity; FABQ-W = Fear-Avoidance Behavior Questionnaire—work.

The literature does not indicate how to score the FABQ subscales when items are left blank. For this study, a subscale was excluded when more than one incomplete response was obtained for the FABQ-PA, or more than two incomplete responses for the FABQ-W. When only one subscale was incomplete, the incomplete subscale was excluded, but the completed subscale was included in the data analysis. This occurred most frequently when a student or a retired individual did not complete the FABQ-W section. A subscale with one incomplete response for FABQ-PA, or one or two incomplete responses for the FABQ-W was included in the data analysis. The subscale score recorded was not the raw total of the incomplete FABQ subscale. Rather, the subscale was recalculated as a proportion of the incomplete total compared to the expected total if all parts of the FABQ subscale were completed. The authors felt that this method made incomplete FABQ subscale scores more representative when being compared with complete FABQ subscale scores.

Data Analysis. All data were analyzed using SPSS Version 10.0 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics for each of the measures evaluated were computed separately for patients with cervical spine pain and patients with lumbar spine pain. The distribution of scores for the FABQ-W and FABQ-PA were examined for normality. One-sample Kolmogorov-Smirnov tests were used to test the hypothesis that the scores for patients with cervical spine pain and scores for those with lumbar spine pain came from a population with normally distributed scores. The χ² tests were used to test differences between patients with cervical spine pain and patients with lumbar spine pain for gender, onset time (acute vs. chronic), payer source (work vs. auto vs. other), and onset type (sudden vs. gradual). Age, disability score, pain intensity, FABQ-PA, and FABQ-W were compared with independent group t tests. Pearson correlation coefficients were used to describe the association between pain intensity, disability, and fear-avoidance beliefs in patients with chronic cervical pain and patients with chronic lumbar pain. Only patients with chronic conditions were included to facilitate comparisons with correlation coefficients reported in the literature in groups of patients with chronic pain. Two-way analysis of variance (ANOVA) using diagnostic group (cervical or lumbar) and gender (male or female), onset time (acute or chronic), onset type (sudden or gradual), and payer source (workers’ compensation, auto insurance, or other insurance) were performed separately using FABQ-W and FABQ-PA as the dependent variable. The alpha level was maintained at 0.01 for all analyses to control for multiple comparisons.

Results

Over the 12 months, 188 new patients were studied. Twenty patients with thoracic spine pain and five patients who did not complete the FABQ (no reason given by the patients) were excluded from the analysis. Of the 163 patients remaining, 48 had cervical pain, 96 had lumbar pain, and 19 had pain at multiple sites (cervical and lumbar). To avoid conflicts during statistical analysis, patients with both cervical and lumbar pain were included only with the region of more severe involvement. This was determined by selecting the higher of the two recorded disability scores (OSW or NDI) at initial evaluation. The additional data (demographic information, pain, and fear-avoidance beliefs) for each of these patients was then included with this group. Eleven patients had higher amounts of disability related to the cervical spine, and eight patients had higher amounts of disability related to the lumbar spine. Therefore, a total of 59 patients with cervical pain and 104 with lumbar pain were included in the data analysis. Twenty-six patients (16.0%) had incomplete FABQ-W subscales (1 lumbar, 8 cervical), and four patients (2.5%) had incomplete FABQ-PA scores (1 lumbar, 3 cervical).

Kolmogorov-Smirnov tests for normality failed to reject the hypotheses that the FABQ-W and FABQ-PA scores came from populations with normal score distributions (P > 0.05 for each analysis). Therefore, the FABQ scores were compared using parametric statistics. Descriptive statistics for patients with cervical pain and patients with lumbar pain are given in Table 1. Differences existed between the cervical spine pain and lumbar spine pain groups for acuity and disability score. Patients with cervical spine pain were more likely to have a chronic condition and had lower disability scores than patients with lumbar pain. Patients with cervical pain showed trends toward younger age and lower fear-avoidance beliefs about physical activity, but these values did not reach statistical significance. For patients with chronic cervical spine pain, a significant correlation was
found between the FABQ-PA and disability (Table 2). For patients with chronic lumbar spine pain, significant correlations were found between all variables (Table 2).

Results of the ANOVA analyses are reported in Tables 3–6. No significant interactions were found in any analysis, although there was a trend for interaction in the acuity analysis (Table 4). Significant main effects were found for gender and for type of symptom onset using both the FABQ-PA and FABQ-W. Higher levels of fear-avoidance beliefs about both work and physical activity were present for men (Table 3) and patients experiencing a sudden onset of symptoms (Table 5). A significant main effect was found for payer source on the work subscale (Table 6). Tukey post hoc testing showed that patients receiving workers' compensation had higher scores than those receiving the automobile insurance (P = 0.01) and other insurance (P < 0.001). A trend toward higher fear-avoidance scores among patients with acute conditions was evident (Table 4); however, these comparisons failed to reach statistical significance. Patients with lumbar pain had higher FABQ-W scores in the analysis in which payer source and diagnosis were the independent variables (Table 6).

Discussion

Although differences were observed in fear-avoidance beliefs scores between patients with cervical and lumbar pain, few comparisons achieved statistical significance. Patients with lumbar pain tended to score 2 to 4 points higher than did patients with cervical spine pain on the FABQ subscales. The minimum clinically important difference of the FABQ subscales is not known, and therefore it is difficult to judge the potential clinical meaningfulness of such differences. An exception to this trend was the FABQ-W scores for patients receiving workers' compensation, where fear-avoidance beliefs for patients with lumbar pain exceeded those with cervical pain by 6 to 9 points (Table 6). These differences indicated that individuals with LBP had a greater degree of fear of work-related activities when they had been injured at work than did patients with work-related cervical pain.

The pattern of correlations among pain, disability, and fear-avoidance beliefs differed between patients with chronic cervical pain and those with chronic lumbar pain. Patients with chronic cervical pain generally had low correlations in all comparisons, and the correlations were consistently lower than the corresponding comparisons in patients with chronic lumbar pain. Particularly low correlations for patients with chronic cervical pain were found between pain and variables related to disability (r = 0.08) and fear-avoidance (r = −0.17 and r = −0.09 for the FABQ-PA and FABQ-W, respectively). An exception was the correlation between disability and the FABQ-PA, which was similar for patients with chronic cervical pain (r = 0.43) and chronic lumbar pain (r = 0.48). These results indicate that disability in patients with chronic cervical pain was not as highly associated with pain intensity, and fear-avoidance beliefs about work activities as in patients with chronic lumbar pain. In both groups, fear-avoidance beliefs about physical activity appear to have a similar relation to a patient’s perceived level of disability.

The correlation between pain intensity and disability (r = 0.58) for this sample of patients with chronic lumbar pain was similar to those reported by other authors.12,30 The correlation between fear-avoidance beliefs and disability in patients with chronic lumbar pain in previous reports have ranged between 0.37 and

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**Table 2. Pearson Correlation Coefficients for Patients with Chronic Cervical and Lumbar Pain**

<table>
<thead>
<tr>
<th></th>
<th>Disability</th>
<th>FABQ-PA</th>
<th>FABQ-W</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cervical (n = 53)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain intensity</td>
<td>0.08</td>
<td>−0.17</td>
<td>−0.09</td>
</tr>
<tr>
<td>Disability</td>
<td>0.43*</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>FABQ-PA</td>
<td></td>
<td></td>
<td>0.38</td>
</tr>
<tr>
<td><strong>Lumbar (n = 75)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain intensity</td>
<td>0.58*</td>
<td>0.34*</td>
<td>0.35*</td>
</tr>
<tr>
<td>Disability</td>
<td>0.48*</td>
<td>0.37*</td>
<td></td>
</tr>
<tr>
<td>FABQ-PA</td>
<td></td>
<td></td>
<td>0.50*</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.01 level (two-tailed).

**FABQ-PA** = Fear-Avoidance Behavior Questionnaire—physical activity; **FABQ-W** = Fear-Avoidance Behavior Questionnaire—work.

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**Table 3. Fear Avoidance Scores for Gender and Diagnosis**

<table>
<thead>
<tr>
<th>Group Means (SD)</th>
<th>Cervical</th>
<th>Lumbar</th>
<th>Cervical</th>
<th>Lumbar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work Subscale</td>
<td></td>
<td>Physical Activity Subscale</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>13.8 (10.3) n = 32</td>
<td>19.7 (15.5) n = 45</td>
<td>13.0 (6.5) n = 38</td>
<td>15.1 (5.4) n = 61</td>
</tr>
<tr>
<td>Male</td>
<td>29.4 (18.9) n = 19</td>
<td>28.9 (19.9) n = 40</td>
<td>16.7 (7.2) n = 18</td>
<td>17.6 (5.8) n = 42</td>
</tr>
</tbody>
</table>

**ANOVA Results**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>Significance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1113.77</td>
<td>1</td>
<td>8.79</td>
<td>0.004</td>
<td>303.13</td>
<td>1</td>
<td>8.41</td>
<td>0.004</td>
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<tr>
<td>Diagnosis</td>
<td>118.48</td>
<td>1</td>
<td>0.94</td>
<td>0.34</td>
<td>74.32</td>
<td>1</td>
<td>2.06</td>
<td>0.15</td>
</tr>
<tr>
<td>Gender × diagnosis</td>
<td>89.36</td>
<td>1</td>
<td>0.71</td>
<td>0.40</td>
<td>12.80</td>
<td>1</td>
<td>0.36</td>
<td>0.55</td>
</tr>
<tr>
<td>Error</td>
<td>16720.07</td>
<td>132</td>
<td></td>
<td></td>
<td>5587.36</td>
<td>155</td>
<td></td>
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</table>

ANOVA = analysis of variance.
The correlations found in this sample (0.37–0.48) are consistent with these values. No previous reports could be found of correlations between pain and disability, or between disability and any measure of fear-avoidance beliefs in patients with chronic cervical pain. In this sample of patients with chronic cervical pain, pain and disability were not correlated ($r = 0.08$).

There are several possible explanations for the larger magnitude of fear-avoidance beliefs and the stronger relations with pain and disability for patients with chronic lumbar pain. One hypothesis is that the patient perceives the potential for pain/reinjury with activity, particularly work-related activity, to be greater when the pain originates from the lumbar spine. When pain originates from the cervical spine, the patient may not believe that the likelihood of increased symptoms with activity is as great, resulting in reduced fear of activity and a more confrontational response to the pain. If this is the case, psychosocial factors other than fear-avoidance beliefs may provide greater insight into the development of chronic cervical pain and disability, and provide further explanation for the dissociation between pain and disability in individuals with chronic cervical pain.

An alternative explanation may be that the FABQ, which was originally designed for patients with LBP, may not be appropriate for use in patients with cervical pain. The Fear-Avoidance Model of Exaggerated Pain Perception was developed to explain individual responses to pain and has been applied to patients with painful conditions other than LBP. The FABQ contains general questions regarding the individual’s perceptions of how activity will affect back pain, without reference to specific activities. Patients completing this questionnaire may not have had related questions referring to “back pain” as relevant to their cervical pain even though they were instructed to do so. An alternative method of measuring fear-avoidance beliefs may prove more useful for future studies.

In addition to differences in fear-avoidance beliefs based on diagnosis, this study investigated differences in fear-avoidance beliefs based on type of symptom onset, acuity, gender, and payer source for patients with cervical spine pain and patients with lumbar spine pain. Previous authors have hypothesized that a sudden onset of symptoms may be associated with higher fear-avoidance beliefs. Crombez et al. found support for this hypothesis using the Tampa Scale for Kinesiophobia, but this relation has not been investigated using the FABQ. A main effect for type of symptom onset was observed for both FABQ subscales, higher scores being associated with a sudden onset of symptoms. This finding gives further support to an association of a sudden onset of symptoms with higher fear-avoidance beliefs. A sudden onset of symptoms may produce a direct connection be-

<table>
<thead>
<tr>
<th>Table 4. Fear Avoidance Scores for Acuity and Diagnosis</th>
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<tbody>
<tr>
<td><strong>Group Means (SD)</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Acuity</td>
</tr>
<tr>
<td>Acute</td>
</tr>
<tr>
<td>Chronic</td>
</tr>
<tr>
<td><strong>ANOVA Results</strong></td>
</tr>
<tr>
<td>Source</td>
</tr>
<tr>
<td>Acuity</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Acuity × diagnosis</td>
</tr>
<tr>
<td>Error</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Table 5. Fear Avoidance Scores for Type of Onset of Symptoms and Diagnosis</th>
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<tbody>
<tr>
<td><strong>Group Means (SD)</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Type of onset</td>
</tr>
<tr>
<td>Sudden</td>
</tr>
<tr>
<td>Gradual</td>
</tr>
<tr>
<td><strong>ANOVA Results</strong></td>
</tr>
<tr>
<td>Source</td>
</tr>
<tr>
<td>Type of onset</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Onset × diagnosis</td>
</tr>
<tr>
<td>Error</td>
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</tbody>
</table>
Fear-avoidance beliefs may serve a maladaptive role, not a protective role, in those with acute pain. Avoidance beliefs may be a protective mechanism that prevents further tissue damage during the initial phases of healing. Previous studies have not compared fear-avoidance beliefs based on payer source. In this study, higher FABQ scores for both subscales were associated with patients receiving work or automobile compensation, screening for high levels of fear-avoidance beliefs may be useful in identifying those at risk for prolonged disability and/or work absence.

Previous reports have not investigated gender differences in fear-avoidance beliefs. The results of this study indicate that male subjects had higher FABQ scores than did female subjects. Other studies have documented that female gender is a predictive factor in the development of neck disorders, and female subjects have increased disability from cervical spine degeneration. Although the specific implications of the findings in this study are limited, it does suggest that an increase in fear-avoidance beliefs may not be the cause of increased cervical disability observed in female patients.

This study investigated fear-avoidance beliefs, pain, and disability in patients with cervical and lumbar pain. The results of this study indicate that fear-avoidance beliefs and pain have stronger relations with disability in patients with lumbar spine pain than for patients with chronic lumbar pain. These results demonstrate that variables that are helpful in determining disability for patients with lumbar spine pain may not be helpful in determining disability for patients with cervical spine pain. Additional work should focus on identifying and testing other variables that may be related to disability for patients with cervical spine pain, or further developing the fear-avoidance theory to the specific difficulties and concerns of patients with cervical pain.

**Conclusion**

The relations between fear-avoidance beliefs, pain, and disability were weaker for patients with chronic cervical pain than for patients with chronic lumbar pain. Significant differences in fear-avoidance beliefs were observed in patients based on gender, type of symptom onset, and payer source. Differences observed in the magnitude of fear-avoidance beliefs between patients with lumbar and cervical pain were generally 2 to 4 points and did not
achieve statistical significance. One exception was indi-
viduals receiving workers’ compensation: those with
lumbar pain demonstrated significantly higher levels of
fear-avoidance beliefs than did those with cervical pain.
It appears that more work needs to be done to discover
variables that are associated with chronic disability for
patients with cervical spine pain.

Key Points
- No significant difference in fear-avoidance be-
liefs was noted between patients with cervical spine
pain and patients with lumbar spine pain.
- Patients with cervical spine pain had weaker as-
sociations between fear-avoidance beliefs, pain, and
disability than did patients with lumbar spine pain.
- Significant differences in fear-avoidance beliefs
were observed for gender, type of symptom onset,
and payer source.

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