Pain and Depression in Injured Workers and Their Return to Work: A Longitudinal Study*

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Abstract
This study investigated the long-term relationships between depression, pain, and return to work in injured workers with chronic pain. Clients (N = 185) completing the Pain Disability Prevention Program were evaluated for pain and depression at three points in time: on admission to the treatment program, at mid-treatment, and at the end of treatment. The return to work (RTW) was assessed at four weeks after the intervention ended. Correlation and logistic regression analyses showed that depression and pain were significantly associated over time, and that depression and affective pain were the most significant variables for predicting RTW regardless of the time of assessment. An initial cluster analysis divided the sample into four groups reflecting fluctuations of depression and pain over time. Chi-square results indicated that individuals with severe or moderate depression and high levels of affective pain were less likely to RTW (from 18% to 21%) compared to individuals with mild depression or normal emotional “ups and downs” and lower affective pain scores (from 61% to 85%). These results highlighted the importance of considering the clinical symptoms profiles over time when determining the probability of RTW.

Résumé
Cette étude examine la relation à long terme entre la dépression, la douleur et le retour au travail (RAT) chez les travailleurs accidentés et atteints de douleur chronique. Dans le cadre du Programme de Gestion de l’Activité Progressive (PGAP), la douleur et la dépression des clients (N = 185) ont été évaluées à trois points dans le temps : à l’inscription au programme, à la mi-traitement et à la fin du traitement. Le retour au travail a été évalué quatre semaines après la fin de l’intervention. Les corrélations et les analyses de régression logistiques ont montré que la dépression et la douleur étaient associées de façon significative dans le temps et que la dépression et la douleur affective étaient les variables les plus significatives pour prédire le RAT et ce, quel que soit le moment de l’évaluation. Une analyse par grappes a divisé l’échantillon en quatre groupes reflétant ainsi les fluctuations de la dépression et de la douleur dans le temps. Les résultats de Chi carré ont révélé que les personnes atteintes d’un niveau de dépression élevé ou modéré ainsi que d’un niveau de douleur affective élevé étaient moins vraisemblables à effectuer un RAT (de 18 à 21 %) lorsque comparées à des personnes qui présentaient une symptomatologie dépressive légère ou absente accompagnée d’une douleur affective moins prononcée (de 61 à 85 %). Ces résultats ont mis en lumière l’importance de considérer les profils de symptômes cliniques dans le temps lorsque l’on souhaite déterminer la probabilité d’un RAT.

In injured workers, a strong association has been previously identified between chronic pain and psychopathology (Dersh, Gatchel, & Polatin, 2001; Gatchel, 2004; Dersh, Gatchel, Polatin, & Mayer, 2002; Dersh, Polatin, & Gatchel, 2002), and, more specifically, between chronic pain and depression (Fishbain, Cutler, Rosomoff, & Rosomoff, 1997; Gatchel, Polatin, & Kinney, 1995; Huang, Lee, & Chong, 2005; Hurwitz, Morgenstern, & Yu, 2003; Ong & Keng, 2003; Rush, Polatin, & Gatchel, 2000; Vines, Gupta, Whiteside, Dostal-Johnson, & Hummler-Davis, 2003; Williams, Jones, Shet, Robinson, & Kroenke, 2004; Williams et al., 2003). Fishbain et al. (1997) reviewed the published literature, focusing on the association between pain and depression, and noted that some studies had design limitations (i.e., cross-sectional and not longitudinal). For instance, 21 studies in the review illustrated a significant relationship between the severity of perceived pain and the level of depression. However, only five longitudinal studies demonstrated that the extent or duration of pain could be linked to depression over time, making it unclear...
whether the extent or the duration of pain, or both, were related to the severity of depression.

To better understand the relationship between pain and depression, researchers considered and analyzed different profiles of patients with chronic pain. As Turk and Okifuji (1998) noted, “We need to consider the important differences between a shotgun strategy and a rifle approach” to improve the health of injured workers. Turk and Okifuji provided pain profile subgroups based on a patient’s level of depression and other psychosocial characteristics. Recently, Turk (2005) reaffirmed the need to evaluate these individuals according to a profile to better understand why some people improve while some do not. Turk noted that several studies used profiles as an outcome (Talo, Forssell, Heikkonen, & Puukka, 2001) or looked for replication of the subgroups (Bergstrom, Bodin, Jensen, Linton, & Nygren, 2001; Gatchel et al. 2002; Jamison, Rudy, Penzien, & Mosley, 1994), and most studies contained no data on the return to work (RTW) or no workers exhibiting moderate or severe depression. More recently, Boersma and Linton (2005, 2006), using cluster analyses, observed that the profiles of people with musculoskeletal pain who also had high scores on the depression measure reported more health care visits and low function ability, prospectively. However, it remains difficult to conclude that the profiles of those chronic pain patients permitted significant contrast between different levels of depression and objective, positive work outcomes. Furthermore, even though the authors were interested in the improvement or failure to improve of these individuals, the subgroups or clusters were cross-sectionally conceived, regardless of potential fluctuations in pain and distress with time, and without association to work outcomes.

A comprehensive study evaluating RTW predictors for workers with chronic pain (e.g., pain intensity, pain anxiety, pain disability, and physical capacity), determined that age and level of depression were the most significant predictors (Vowles, Gross, & Sorrell, 2004). These two variables accounted for approximately one-third of the variance in RTW, with the depression level evaluated by the Beck Depression Inventory (BDI) as the variable most highly correlated with post-treatment work status (Vowles et al., 2004). The authors noted the study limitations, such as the absence of an evaluation of the levels of depression, both cross-sectionally and with time. Burns, Kubilus, Bruehl, Harden, and Lofland (2003) also highlighted changes in depression with time from pre- and mid- to post-treatment, and noted that early changes in depression had a significant impact on general activity. At a clinical level, the evaluation of fluctuations over time could help mental health professionals working with chronic pain clients to rapidly screen and identify more severe pain and depression symptoms and, consequently, to intervene earlier.

The primary goals of this study were to determine the nature of the long-term association between depression, pain, and RTW by assessing the profiles of injured workers with chronic pain. The objectives were fourfold: 1) to evaluate the correlations between pain and depression over time (i.e., at admission to a program, mid-treatment, and post-treatment), 2) to identify the most significant predictors of RTW by considering depression and pain scores over time, 3) to establish profiles of injured workers at three points in time using the most significant predictors of RTW, and 4) to analyze the RTW in injured workers according to their profile.

Method

Procedure and Participants

Of 224 clients registered in a Pain Disability Prevention program (Sullivan & Stanish, 2003), 185 (83%) completed the 10-week treatment and all three repeated evaluations: 1) Evaluation 1 was on admission to the treatment program, 2) Evaluation 2 was at week 4 (mid-treatment), and 3) Evaluation 3 was at week 9 (end of treatment). The subjects included 84 women and 101 men aged from 21 to 62 years (Mean = 42.05, SD = 8.24). These clients could not work due to an occupational injury (69% had back or neck injuries, 21.2% had upper extremity injuries, and 9.8% had lower extremity injuries) and were receiving benefits from the Workers’ Compensation Board of Nova Scotia. Individuals were considered for referral to the intervention program if: 1) they did not work for more than four weeks, 2) pain symptoms were determined to be a primary limiting factor for RTW (e.g., persistent pain with no objective physical findings), and 3) there was evidence of one or more yellow flags. Yellow flags were considered to be individuals who expressed emotional distress in the conversation with the case worker, injured workers with previous unusually long time loss claims, and requests for further medical specialist examinations. On average, clients were absent from the workplace for 41 days (SD = 77.33). The most common occupational categories the study participants belonged to were Labourer (29.7%), Tradesperson (14.1%), Nursing (13.5%), Retail (5.9%), Fishing (4.3%), Driving (3.2%), and Restaurant (3.2%).

Program

The Pain Disability Prevention (PDP) program was
a 10-week standardized behavioural-cognitive intervention that aimed to increase activity involvement during the post-injury period, and to minimize psychological barriers to rehabilitation progress (Sullivan & Stanish, 2003). The main components of the PDP program were: 1) maintaining an activity log throughout the course of treatment, 2) activity scheduling in which the client's spouse was invited, 3) a walking program (starting with a 15-min walk), 4) increasing activity involvement, and 5) overcoming psychological obstacles to activity involvement (e.g., methods of approaching physical activity to minimize clients' worries about potential re-injury). Each of these components has been described in more detail elsewhere (Sullivan & Stanish, 2003). Clients were also provided with a copy of the PDP Client Workbook to maximize the fidelity of the treatment protocol. The Client Workbook was conceived as a daily agenda to facilitate task management, goal setting, activity scheduling, and graded activity involvement.

**Measures**

As part of the intervention protocol, pain and depression were measured on three separate occasions. Pain was measured using the short form of the McGill Pain Questionnaire (SF-MPQ) (Melzack, 1983, 1987), which consists of 11 items that refer to the sensory dimension of the pain experience (range is from 0 to 33), and four items related to the affective dimension (range is from 0 to 12). The affective dimension comprises the following items: tiring-exhausting, sickening, fearful, punishing-cruel, whereas the sensory dimension contains items related to direct physical aspects such as hot-burning, cramping, etc. Each descriptor was ranked on a 4-point intensity scale, from 0 = none to 3 = severe. The MPQ has been widely used in studies related to chronic pain (Fishbain et al., 1997) and its psychometric qualities are well documented (Melzack & Katz, 2001). In this study, the alpha coefficients ranged, over time, from .78 to .84 for the sensory subscale, and from .60 to .73 for the affective subscale (three repeated measures).

Depression was measured using the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), a 21-item self-report rating inventory measuring characteristic attitudes and symptoms of depression (e.g., Pessimism and Insomnia). Each item was a list of four statements arranged in increasing severity for a particular symptom of depression (from 0 = minimal to 3 = severe). A score from 5 to 9 indicated that the individual faced normal emotional "ups and downs"; a score from 10 to 18 represented a mild to moderate depression; a score from 19 to 29 represented a moderate to severe depression; and a score from 30 to 63 corresponded to a severe depression. Higher total scores indicate more severe depressive symptoms. According to the analyses used in this article, the scores for the BDI scales are used either as a continuous variable (i.e., severity of depressive symptoms) or as a categorical variable (e.g., normal emotional ups and downs, mild to moderate depression). Even though authors mention that assessment devices used to delineate individuals' placement on the dimensions of depression severity should be further developed (Prisicandaro & Roberts, 2005), and that a categorization of depressive severity could generate problems for measurement precision (such as a distortion of variance, see Hankin, Fraley, Lahey, & Waldman, 2005; Ruscio & Ruscio, 2002), there is a recognized clinical cut-off point for identifying specific profiles of depression severity (see above), which can help clinicians intervene appropriately according to their client's symptom level.

The BDI was used in several studies on chronic pain (Fishbain et al., 1997), and demonstrated high internal consistency for psychiatric (α = .86) and non-psychiatric (α = .81) populations (Beck, Steer, & Garbin, 1988). In this study, the alpha coefficients for the BDI ranged from .92 to .94, according to the time of assessment (three repeated measures).

The RTW was assessed four weeks after the intervention ended and was obtained from the Workers' Compensation Board of Nova Scotia database. The RTW was defined as the time when a participant returned to full-time work and his/her case file was closed. All other situations were classified as "No RTW."

**Statistical Methods**

First, Pearson correlation coefficients were calculated between pain and depression measures at three points in time. Second, Logistic regressions, using the Forward Wald procedure, were conducted for RTW, considering each assessment time for pain and depression in separate regressions; thereafter, all significant predictors were entered in a final regression regardless of the time of assessment. Third, a cluster analysis was carried out on the significant predictors of return to work using all assessment times. Cluster analysis has been successfully used in other studies with clients experiencing chronic, acute, or subacute pain (Bergstrom, Bodin, Jensen, Linton, & Nygren 2001; Boersma & Linton, 2005, 2006; Talo et al., 2001) and it is recognized as a robust method to divide clients into "homogenized" subgroups. In fact, cluster analysis refers to a family of methods for identifying cases with distinctive characteristics in heteroge-
TABLE 1
Correlation Between Depression and Pain Scales Over Time

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BDI</td>
<td>MPQ1</td>
<td>MPQ2</td>
</tr>
<tr>
<td>Time 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (BDI)</td>
<td>.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain – affective (MPQ1)</td>
<td>.36</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>Pain – sensory (MPQ2)</td>
<td></td>
<td></td>
<td>.67</td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (BDI)</td>
<td>.60</td>
<td>.42</td>
<td>.28</td>
</tr>
<tr>
<td>Pain – affective (MPQ1)</td>
<td>.35</td>
<td>.55</td>
<td>.38</td>
</tr>
<tr>
<td>Pain – sensory (MPQ2)</td>
<td>.35</td>
<td>.56</td>
<td>.56</td>
</tr>
</tbody>
</table>

All correlation coefficients are significant at p < .01; BDI = Beck Depression Inventory; MPQ = McGill Pain Questionnaire

TABLE 2
Logistic Regression Coefficients for the Significant Predictors of RTW

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Odds ratio</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables retained for Time 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>.94</td>
<td>(.908 – .979)</td>
</tr>
<tr>
<td>Pain – Affective</td>
<td>.79</td>
<td>(.685 – .902)</td>
</tr>
<tr>
<td>Variables retained for Time 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>.89</td>
<td>(.844 – .933)</td>
</tr>
<tr>
<td>Pain – Affective</td>
<td>.75</td>
<td>(.643 – .882)</td>
</tr>
<tr>
<td>Variables retained for Time 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>.87</td>
<td>(.815 – .918)</td>
</tr>
<tr>
<td>Pain – Affective</td>
<td>.68</td>
<td>(.574 – .797)</td>
</tr>
<tr>
<td>Variables retained when all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>entered together regardless of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (Time 3)</td>
<td>.87</td>
<td>(.815 – .918)</td>
</tr>
<tr>
<td>Pain – Affective (Time 3)</td>
<td>.68</td>
<td>(.574 – .797)</td>
</tr>
</tbody>
</table>

The fourth analysis used chi-square tests (using the Pearson chi-square coefficient) to assess differences between the clients’ profiles relating to their RTW.

**Results**

Correlation coefficients between pain and depression measures were all significant over time (from \( r = .32 \) to \( r = .77; p < .01 \)). However, these results revealed that the range of correlation coefficients varied according to the observed scale and the assessment time (Table 1). The depression score was more highly correlated with the affective pain score (from \( r = .46 \) to \( r = .53, p < .01 \)) than the sensory pain score (from \( r = .36 \) to \( r = .43, p < .01 \)). With respect to the time assessment, and regardless of pain and depression scales, the correlation coefficients were highest between two consecutive time assessments (i.e., between Time 1 and Time 2, and between Time 2 and 3).

Logistic regression results showed that affective pain and depression scores, considering each assessment time in separate regressions, significantly and negatively predicted RTW (Table 2). Sensory Pain scores were not significant predictors of the RTW. When all assessment times for affective pain and depression scores were entered in the same logistic regression together, affective pain (odds ratio = .68) and depression scores (odds ratio = .87) remained predictive at the post-treatment assessment.

Taking the logistic regression results into consideration, depression and affective pain scores at the three assessment times were used for the cluster analyses. The iterative clustering method demonstrated that the best patient distribution for each cluster was achieved with a four-cluster solution. The
four clusters corresponded to four distinct depression and affective pain profiles identified during the follow-up period, reflecting the Beck Depression Inventory classifications (Figure 1). Accordingly, they were termed: a) severe depression and high affective pain (N = 17), b) moderate depression and high affective pain (N = 24), c) mild depression and significant affective pain (N = 70), and d) normal emotional “ ups and downs” and low affective pain (N = 74). These profiles indicated that all participants improved over time except for the moderate depression and high affective pain profile, which deteriorated at the final assessment time for depression and affective pain (Figure 1). Chi-square tests and ANOVAs verified the relationships between gender, age, and the four depression profiles. This helped to avoid potential confounders such as gender and age (McGeary, Mayer, Gatchel, Anagnostis, & Proctor, 2003; Vowles et al., 2004). The results from these tests did not detect significant differences between gender ($\chi^2 = 5.79, df = 3, p = .12$) and age ($F = .99, df = 3, p = .97$) for the four profiles.

Chi-square results ($\chi^2 = 48.09, df = 3, p < .05$) also indicated that people with lengthy severe or moderate depression and presenting a high level of affective pain were less likely to RTW (18% to 21%) compared to people with mild depression and significant affective pain (61%) or compared to people with normal emotional “ ups and downs” and low affective pain (85%).

Discussion

The results of this study demonstrated that a significant correlation existed between the severity of depression and the severity of pain experienced over time, and that depression and pain levels were different in injured workers. As well, the data revealed that the depression and pain profiles were strongly associated with RTW.

The correlation coefficients between pain and depression assessed at each time reinforced the results obtained by different authors in their cross-sectional design studies where pain and depression were strongly correlated (Fishbain et al., 1997; Gatchel et al., 1995; Huang et al., 2005; Hurwitz et al., 2003; Ong & Keng, 2003; Rush et al., 2000; Vines et al., 2003; Williams et al., 2003, 2004). In addition, the correlation coefficients between pain and depression scores across time were also significantly correlated, supporting the common pathogenetic mechanisms hypothesis, in which pain and depression are thought to be physiologically concomitant because they both use serotonin and norepinephrine neurotransmitters directly or indirectly (Fishbain et al., 1997).
The logistic regression results indicated the most significant predictors of RTW by analyzing pain and depression scores at different assessment times: Depression and affective pain scores were the most significant predictors of the RTW compared to sensory pain scores. Even though affective pain and depression scores assessed at each time predicted the RTW, when all time assessments were entered in the same analysis, only the depression (odds ratio = .87) and affective pain scores (odds ratio = .68) at post-treatment were retained in the analysis. These results suggest that there is value in evaluating the ability of pain and depression measures over time to predict the RTW, rather than just using these measures as a screening evaluation for people entering the program.

Using cluster analyses to evaluate these fluctuations over time, in terms of affective pain and depression, showed that 78% of the 185 injured workers (N = 74 and N = 70) had normal emotional “ups and downs” or mild depression levels with the lowest levels of affective pain, and that 22% (N = 24 and N = 17) presented a moderate or severe depression with the highest levels of affective pain over 10 weeks. For most of the participants, this study’s results reflect those of Gatchel et al. (2002), in which all injured workers with low depression levels improved post-treatment. However, when people with chronic pain had higher depression levels, their depression could either deteriorate or improve over time. Consequently, it is critical to assess the fluctuations of depression in people with chronic pain, particularly for those suffering moderate or severe depression. Furthermore, in terms of severity, all profiles continued to demonstrate a strong association between affective pain and depression, over time. Contrary to the study conducted by Krause, Wiener, and Tait (1994), this study found a clear and significant association between mental and physical symptoms. This was demonstrated by fluctuating depression and correlated pain levels (and vice versa) in injured workers over time. These results confirmed the hypothesis that the extent of long-term depression is closely related to the occurrence of pain over time. These results are in agreement with Turk and Okifuji’s study (1998), which focused on heterogeneous profiles of injured workers. For instance, the dysfunctional profile (Turk, 2005; Turk & Okifuji, 1998), which represents patients who perceived a high level of psychological distress and pain compared to adaptive copers, corresponded well with this study’s severe and moderate depression profiles.

This study’s results suggested that the depression and affective pain profiles were also linked to the probability of RTW. The majority of participants (from 61% to 85%) in the normal emotional “ups and downs” and mild depression with lower levels of affective pain profiles did RTW, compared to the minority of participants (from 18% to 21%) belonging to the moderate and severe depression with higher levels of affective pain profiles. This was similar to a study conducted with coronary disease patients that identified different depression profiles using BDI scores, where two-thirds of patients with moderate depression did not RTW (Söderman, Lisspers, & Sundin, 2003). These results indicated that the severity of the levels of depression and affective pain were linked to the RTW rate. Though the BDI questionnaire has been criticized as an ineffective tool to assess depression in Chronic Pain clients (Dersh, Polatin, & al., 2002; Novy, Nelson, Berry, & Averill, 1995; Wesley, Gatchel, Garofalo, & Polatin, 1999), the BDI score is accurate enough to distinguish different depression profiles of injured workers. It is interesting to note that Boersma and Linton (2005), by using early screening to identify clients at risk, observed that 62% of those with a “Distressed-Fear Avoidant” profile stayed on long-term sick leave during the following year, compared to 35% of those with a “Fear-Avoidant” profile. These results indicated that the level of depression or distress was strongly linked to the rate of RTW.

Some investigators have noted that the function of psychosocial rehabilitation should be to increase the RTW rate of individuals with serious depression or to reduce their number of workday absences (Goldner et al., 2004; Turk & Okifuji, 1998). Since there is often co-morbidity in chronic pain patients, Gatchel (2002, 2004) strongly suggested treating depression and pain simultaneously, and in an interdisciplinary manner to attain positive and significant outcomes (Gardea & Gatchel, 2000). Turk and Okifuji (1998) suggested that all back pain patients should receive physical therapy, psychological support, and encouragement to target a full remission. They also added that certain patients (e.g., dysfunctional profile) needed additional modules such as treatment for depression. To prevent more significant work outcomes, it was important to assess chronic pain patients’ psychopathology or depression upon entry into a pain program, in addition to assessing the changes that occurred during treatment (Dozois, Dobson, Wong, Hughes, & Long, 1995; Rush et al., 2000). Thus, cognitive-behavioural therapy interventions for people with chronic pain could be tailored to their depression level (Corbière & Shen, in press). Vlaeyen and Morley (2005) reported positive results from cognitive-behavioural therapy interventions,
but also specified that it was important to consider mediators (e.g., change in beliefs) and moderators (e.g., therapist competence) when applied to chronic pain patients. Other investigators noted that cognitive variables should also be considered when evaluating injured workers' responses to treatment, and that appropriate links should be made to clinical symptoms such as cognitive distortion and self-control to depression (Maxwell et al., 1998), sense of coherence (Petrie & Azariah, 1990), negative beliefs/self-efficacy (Brekke, Hjortdahl, & Kvien, 2003; Ong & Keng, 2003), intellectual functioning (Shifren, Park, Bennett, & Morrell, 1999), pain catastrophizing (Amundson, Norton, & Norton, 1999; Sullivan & Stanish, 2003), and fear-avoidance (Boersma & Linton, 2005).

This study had some limitations that should be noted. One limitation was the sample size and composition: Only injured workers who completed the 10-week treatment and all three evaluations were assessed. In addition, the sample size was only 185 injured workers, limiting generalization of the results to similar injured workers with chronic pain. However, the results of this study were in agreement with data from studies with similar or larger sample sizes (Boersma & Linton, 2005; Gatchel, 2002, 2004; Leino & Magni, 1993).

A second limitation was the lack of clinical information about injured workers before their registration in the Pain Disability Prevention program. Consequently, a dilemma arises in the question of whether depression occurred before or after the onset of pain? Retrospective studies are one possible solution to this problem, allowing data collection regarding depression before the onset of injury or pain. This information could identify past depression events and help determine whether the depression occurred before or after pain had occurred. Psychologists or psychiatrists, in collaboration with other health professionals, could respond better to patient needs by treating patients who had a lifetime history of a depressive disorder or depressive symptoms at the onset of pain. In this vein, Andrews (2001) recommended that depression be managed as a chronic disease to avoid relapses.

In conclusion, this study illustrated that there were varied longitudinal depression and pain profiles for injured workers and that these profiles were strongly associated with RTW. Consequently, these results highlighted the importance of considering clinical symptoms profiles when determining the probability of RTW. While the results do not indicate the direction of the causal relationships between depression and pain, there is a clear and significant association between these clinical symptoms over time. We recommend specific, targeted psychosocial interventions for chronic pain clients with moderate or severe depression, and the systematic evaluation of moderators and mediators to help patients improve their quality of life and increase their probability of RTW.

This study was supported by a Canadian Institute of Health Research grant. The corresponding author is grateful for a Scholar Award from the Michael Smith Foundation for Health Research, and a New Investigator Award from Canadian Institutes of Health Research.

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Received November 29, 2005
Revised May 10, 2006
Revised August 31, 2006
Accepted September 1, 2006

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