Lifetime physical and sexual abuse in chronic pain patients: psychosocial correlates and treatment outcomes

B. E. BAILEY†, R. N. FREEDENFELD†, R. SANFORD KISER† and R. J. GATCHEL‡*

† Texas Pain Medicine Clinic, Dallas, USA
‡ Department of Psychiatry-Division of Psychology, University of Texas Southwestern Medical Center at Dallas, Dallas, USA

Accepted for publication: October 2002

Abstract

Purpose: This study describes a subgroup of diagnostically heterogeneous chronic pain patients, with a lifetime history of physical and/or sexual abuse, who underwent a pain management programme. A battery of psychosocial and pain measures were assessed, as well as 1-year post-treatment socio-economic outcomes.

Method: The prevalence of a history of abuse was assessed via a semi-structured interview of 162 consecutive patients (112 females and 50 males) presenting for 4–8 weeks of treatment in an interdisciplinary, outpatient rehabilitation programme. Treatment outcome data were gathered immediately, 6 months and 1 year following discharge. The chronic pain patients with a history of abuse were compared to those without a history of abuse on several pre-treatment psychosocial variables—pain severity, psychological distress, DSM-IV Axis I comorbidity and health care utilization. Patient groups were matched on age, race, primary pain diagnosis, time in pain prior to treatment and gender.

Results: Results indicated that 61% of patients had a history of lifetime physical and/or sexual abuse. Rates of sexual, and combined sexual and physical, abuse across the lifespan were higher for women than for men. Abused patients had a greater number of psychiatric diagnoses than nonabused patients. Abused patients also reported greater affective distress, less perceived life control, and a greater number of ER visits in the 6 months prior to treatment than their nonabused counterparts. A model consisting of gender (female), a higher number of psychiatric diagnoses, and higher affective distress was found to be a sensitive and relatively accurate predictor of abuse history. Finally, analyses indicated that, despite having greater psychosocial risk factors during the pre-treatment period, chronic pain patients with a history of abuse benefited from treatment and maintained treatment gains to a degree similar to nonabused chronic pain patients.

Conclusions: Chronic patients with an abuse history can successfully complete a rehabilitation programme if the programme is designed to treat their psychosocial distress. Moreover, this also carries over to treatment outcome. A history of abuse does not have to negatively impact long-term treatment outcomes in this population of chronic pain patients.

Introduction

Pain is the primary symptom that instigates people to seek medical treatment in the US. Pain affects over 50 million Americans, and accounts for over 35 million new office visits to physicians and over 70 million (80%) of all office visits to physicians each year. It costs over $70 billion annually in health care costs and lost productivity. In addition, chronic pain is a demoralizing condition that confronts the sufferer not only with stress created by pain, but a host of other continuing stressors that compromise all aspects of his or her life. It taxes not only the individual sufferer, but significant others that provide the patient support. On a societal level, pain creates a burden in lost productivity, tax revenue, health care expenses, and disability benefits. The frequency of sexual and physical abuse has received increasing attention in the lay media and in the scientific community over the last two decades and, more recently, in the study of pain. Investigations into the long-term sequelae of abuse have uncovered high prevalence among individuals with psychiatric syndromes, such as Major Depressive Disorder and Post-traumatic Stress Disorder. Psychological distur-
bances that have been reported in nonclinical samples of female adult victims of childhood sexual abuse include the following: high levels of stress; post-traumatic stress disorders; suicidal ideation or acts; poor self-esteem; psychosis; anxiety disorders; dissociation; adult sexual victimization; and alcohol and substance abuse.

In addition to high abuse rates among psychiatric patients, certain groups of chronic pain patients (e.g., pelvic pain, headache, lower back pain and fibromyalgia) have been found to have high rates of childhood sexual and physical abuse, as well as high rates of abusive relationships in adulthood. A majority of investigations into abuse prevalence among pain patients have focused on those with chronic pelvic pain, a group which tends to be both psychiatrically distressed and lacking identifiable physical dysfunction.

Research with adult survivors of physical and sexual abuse has demonstrated that these individuals have increased levels of somatization, somatic anxiety, and/or high levels of health care utilization compared to nonabused controls. Such findings have prompted researchers to examine specific traumatic events and their psychosocial sequelae in the lives of pain patients. Mounting evidence indicates that traumatic events, such as physical and sexual abuse, may leave adult survivors psychologically distressed. The possibility exists that this level of psychological distress may prevent abused pain patients from making adequate progress in a rehabilitation programme or returning to a productive lifestyle.

The assessment of consequences of lifetime physical and sexual abuse may be necessary with chronic pain patients in order to plan appropriate psychological treatment as part of the rehabilitation process, which may allow this subgroup of individuals to maintain treatment gains and a more productive lifestyle. The current study focused on the psychosocial correlates of lifetime abuse in a group of diagnostically heterogeneous pain patients in an interdisciplinary pain treatment programme. In addition, treatment outcomes for this subgroup of patients with a history of abuse were analysed.

The primary objectives of this study were to: (a) assess the prevalence of lifetime sexual and/or physical abuse in a heterogeneous chronic pain population; (b) describe the subgroup of patients with a history of abuse in terms of DSM-IV diagnosis and comorbidity; (c) describe the subgroup of patients with a history of abuse in terms of pain severity and psychological distress as measured by the Multidimensional Pain Inventory (MPI), the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI); (d) describe the subgroup of patients with a history of abuse in terms of health care utilization; (e) determine if a history of abuse is correlated with immediate treatment outcome; and (f) determine if a history of abuse is correlated with measures of long-term treatment outcome, such as health care utilization, pain severity and psychological distress.

Method

SUBJECTS

Subjects in this study were 162 consecutive chronic pain patients (112 females and 50 males) referred for treatment to an interdisciplinary, outpatient rehabilitation programme. Subjects were divided for analysis into three groups. The first group consisted of 60 patients with chronic pain (pain lasting 6 months or longer) who responded positively to questions regarding lifetime physical or sexual abuse (one type of abuse only), embedded in a semi-structured intake interview performed by a psychiatric nurse practitioner. The second group consisted of 38 patients with chronic pain who responded positively to questions regarding physical and sexual abuse (both types of abuse), embedded in the intake interview. The third group of subjects consisted of 64 patients with chronic pain who responded negatively to questions regarding abuse in the initial intake interview.

INTERDISCIPLINARY REHABILITATION PROGRAMME

Each patient participated in treatment for 8 hours per day, 5 days per week, for a total of 4 to 8 weeks (mean = 5.9 weeks). Length of treatment was determined by the individual needs of the patient, as well as allowances by the insurance carrier. Each day, treatments were provided within the framework of a semi-structured schedule: nursing assessment, physical therapy, physician rounds (once per week), group psychotherapy (twice per week), lunch, psychoeducational group 1, psychoeducational group 2, and occupational therapy (2 hours per day). Patients attended group psychotherapy twice per week and physician rounds once per week. Therefore, individual psychotherapy, biofeedback training, hypnotherapy, acupuncture, and conjoint marital/family therapy were provided on those two days the patient did not attend group or see the physician. In addition, these modalities were often provided in lieu of one of the occupational therapy hours. The interdisciplinary team of treatment providers met for 2 hours each week to assess the progress and barriers to recovery.
of each patient, and to make adjustments to the patient’s treatment plan according to that assessment.

PROCEDURE

Standard physical, psychosocial, social and economic data were collected on an ongoing basis from all programme participants from December 1997 to May 2001 in order to monitor treatment outcomes, and strengths and weaknesses of the pain management programme. Data were collected pre-treatment, immediately post-treatment, 6-months post-treatment, and 1-year post-treatment. The initial intake interview by a psychiatric advanced practice nurse (see below) was conducted upon patient referral several weeks before the patient began the treatment programme. The medical/psychiatric evaluation by a psychiatrist (see below) was also conducted at that time. The general information questionnaire, the MPI, BDI and BAI were completed by the patient on his or her first day of treatment. The MPI, BDI, and BAI were again completed by the patient on his or her last day of treatment. The ‘clinician rating’ (see below) was completed by the patient’s treating physician the week of discharge. At 6- and 12-month follow-up, the patient was contacted by phone by a clinical psychology doctoral candidate and administered a brief version of the MPI (see below), as well as questions regarding health care utilization and work status. The ‘activity level’ section of the MPI, as well as the BDI and BAI, were then mailed to the patient. If the patient did not return the questionnaire within two weeks, he or she was called and given a reminder to return the testing.

MATERIALS

General information questionnaire

A general information questionnaire was given to each patient to complete as part of a standard programme intake evaluation. Items pertained to demographic data, as well as employment status. In addition, items asked for information about how pain began, time in pain, medications used, past treatment for pain, and health care utilization in the 6 months prior to programme intake.

Semi-structured initial intake interview (abuse history)

As part of a standard programme intake evaluation, a semi-structured initial intake interview was administered to each patient. The interview was conducted by a psychiatric advanced practice nurse, and included standard questions about past and present physical and sexual abuse imbedded in the developmental history. The patient was first asked whether he or she had ever been abused physically, emotionally, or sexually. If physical abuse was endorsed, questions followed regarding the duration of the abuse, nature of the relationship to the perpetrator, and whether the patient sought medical attention for injuries sustained during abuse. If sexual abuse was endorsed, questions followed regarding the duration of abuse, age of onset, relationship to the perpetrator, whether it involved exposure, fondling or intercourse, whether the patient told anyone or talked about it in therapy. For the purpose of the current study, patients who reported one incident of physical abuse, and patients who reported sexual exposure only, were excluded from the abuse groups.

Medical/psychiatric evaluation (DSM-IV diagnosis)

As a standard part of programme intake evaluation, patients were evaluated for current medical and psychiatric status by an administrative physician, board certified in psychiatry and pain medicine. Upon conclusion of the evaluation, DSM-IV Axis I diagnoses were documented in a report by the physician.

Multidimensional Pain Inventory (MPI)

The MPI is an empirically derived multidimensional measure developed specifically for use with chronic pain patients, which assesses the individual’s subjective experience of pain and coping ability. The 61-item, Likert-type, self-report questionnaire yields scores for 12 scales, including pain severity, interference, life control, affective distress, support, punishing responses, solicitous responses, distracting responses, household chores, outdoor work, activities away from home, social activities and general activity level. The scales have demonstrated reliability estimates ranging from 0.70 to 0.90, and stability coefficients between 0.62 and 0.91.

Beck Depression Inventory-I (BDI)

The BDI was originally developed by Beck et al., and was later revised and then copyrighted in 1978. This study uses the revised version. The BDI is a 21-item self-report questionnaire measuring the intensity of depressive symptomatology. The reliability of the BDI is generally good, with internal consistency reliability coefficients exceeding 0.73 in nonpsychiatric samples.
The validity has been demonstrated to be adequate, with a correlation of 0.60 found with the depression scale of the MMPI (in a nonpsychiatric sample), and greater than 0.73 with the Hamilton rating scale for depression.  

Beck Anxiety Inventory (BAI)

The Beck Anxiety Inventory was developed by Beck et al. The BAI is a 21-item inventory that measures the presence and intensity of self-reported anxiety. Descriptive statements of anxiety symptoms are rated on a four-point Likert-type scale. The reliability of the BAI is good, with internal consistency reliability coefficients exceeding 0.92 in psychiatric outpatient samples. The validity has been demonstrated to be adequate, with a correlation of 0.58 found with the state trait anxiety inventory (in a psychiatric sample), and 0.51 with the Hamilton Anxiety Rating Scale-Revised.

Clinician-rated primary pain diagnosis

As a standard part of the discharge procedure, the primary pain diagnosis for each patient was listed by his or her treating physician on a ‘clinician rating’ sheet. This was deemed the most reliable source of diagnostic information, as this diagnosis was made after the physician examined and treated the patient’s primary pain problem extensively, throughout the treatment programme.

Programme evaluation questionnaire (health care utilization and work status)

Patients were contacted by phone at 6- and 12-months post-treatment, and were asked questions about their current status for the purpose of programme effectiveness evaluation. Questions addressed satisfaction with treatment and the patient’s estimate of his or her percent improvement. Four questions addressing health care utilization were identical to the health care utilization questions on the general information questionnaire given at the beginning of treatment.

Brief screening version of the MPI

Patients were also administered by phone at 6- and 12-month post-treatment a brief screening version of the MPI designed by Kerns, and colleagues, and cited in Turk and Melzack. The screening version consisted of eight questions that address pain severity, pain’s interference, life control and affective distress.

Mailed follow-up questionnaire

For the second part of the 6- and 12-month post-treatment assessment, patients were mailed the BDI, BAI, and the activity level portion of the MPI, all of which are described above.

DESIGN AND ANALYSES

The current study was prospective in design, in that it utilized data collected on an ongoing basis from programme participants at intake, discharge, and 6- and 12-months post-discharge. Due to the potential confounding effects of certain group characteristics in analysis of the study hypotheses, analyses were conducted to determine whether the three patient groups differed significantly on the variables of type of pain, time in pain prior to treatment, race, age and gender. One-way analysis of variance was used to determine whether significant differences existed among the three groups in age. Two-way contingency table analyses were conducted to evaluate whether the three patient groups differed significantly in primary pain diagnosis, time in pain prior to treatment, race and gender. Those variables that differentiated the groups to a significant degree were entered as fixed factors, in addition to abuse status, in analyses of the major hypotheses. Analyses of variance (ANOVA), multivariate analyses of variance (MANOVA), and chi-square analyses were used to compare pre-treatment information for the three groups of subjects. Additionally, the study design contained a treatment outcome component. The relationships among abuse history and treatment outcome were addressed using Analyses of Covariance (ANCOVA), with pre-treatment scores as covariates, and chi-square analyses. It should also be noted that, for clarity of interpretation purposes, whenever there was a gender effect present, separate analyses were conducted for each gender. This was done in order to avoid the necessity of having to interpret multiple complex two-way and three-way interaction effects that would distract the reader from the major results of the study. Finally, logistic regression analysis was used to predict abuse history based on those pre-treatment and treatment outcome variables that significantly related to abuse in preliminary analyses. All analyses in this study were conducted using SPSS for Windows—Version 9.0.

Results

At the outset, it should be noted that a great number of statistical analyses were conducted for this study, thus increasing the probability of Type I errors. However, it
was deemed that, because many of the analyses were preliminary in nature, an overly conservative approach to the analyses (such as a Bonferroni correction) was not warranted. Of course, replication of results for each hypothesis, using more specific measures and more conservative statistical procedures, will be important in future studies.

DEMOGRAPHIC CHARACTERISTICS

A majority of patients in this study were married (63.8%), unemployed at the time of treatment intake (61.1%), most recently employed in a skilled trade or clerical job (37.2%), and had partial college training (33.3%). Most patients’ primary form of payment was Workers’ Compensation (73.9%), and the average patient age was 42 years. Most patients were white (75.3%), female (69.1%), had some form of back pain (34.4%), and had been in pain longer than 24 months (55.0%).

Due to the potential confounding effects of certain demographic characteristics in assessing the study hypotheses, analyses were conducted to determine whether the three abuse groups differed significantly on the variables of pain diagnosis, time in pain prior to treatment, race, age and gender. The sole demographic variable that significantly differentiated abuse groups was gender, $\chi^2 (2) = 12.73$ $p = 0.002$. Therefore, separate analyses were often conducted for males and females for some variables.

PREVALENCE OF ABUSE

Of the 162 patients participating in this study, 99 patients (61%) reported a history of physical and/or sexual abuse (table 1). As can be seen, 30% reported a history of physical abuse alone, 12 patients (7%) reported a history of sexual abuse alone, and 38 patients (24%) reported a history of combined abuse. Of the 112 female patients, 75 (67%) reported a history of physical and/or sexual abuse. Thirty-one females (28%) reported a history of physical abuse alone, nine females (8%) reported a history of sexual abuse alone, and 35 females (31%) reported a history of combined abuse. Of the 50 male patients, 24 (48%) reported a history of physical and/or sexual abuse. Eighteen males (36%) reported a history of physical abuse alone, three males (6%) reported a history of sexual abuse alone, and three males (6%) reported a history of combined abuse.

PRE-TREATMENT PAIN AND PSYCHOSOCIAL DESCRIPTORS

Pain severity and pain-related life interference

One-way MANOVAs were conducted to determine whether MPI pain severity and pain-related life interference significantly differed among patients with one type of abuse, both types of abuse, and no history of abuse. Results for the female sample revealed significant differences among groups on the dependent measures, Wilks’ $\Lambda = 0.917, F(4, 216) = 2.405, p = 0.051$. ANOVAs of pain severity and interference independently were conducted as a follow-up to the MANOVA. ANOVA results indicated significant differences among abuse groups on the Interference scale, $F(2, 109) = 4.648, p = 0.012$, but not the Pain Severity scale, $F(2, 109) = 0.061, p = 0.941$. Pairwise comparisons among abuse groups revealed that females with a combined history of abuse reported significantly greater pain-related life interference than females with no history of abuse ($p = 0.009$). No such findings were revealed when the male sample size was analysed.

Axis I comorbidity

Over 90% of the patients in this study (including those without a history of abuse) had a diagnosis of somatoform pain disorder. Because this diagnosis represents a baseline in the group, its presence was not included in the following analysis of comorbid disorders. In addition, all diagnoses reported are for lifetime prevalences. A two-way ANOVA was conducted to determine whether Axis I diagnoses were more prevalent among female and male patients any history of abuse or no history of abuse. Results revealed that patients with any abuse history had a significantly greater number of Axis I diagnoses than patients with no abuse history, regardless of gender, $F (1, 158) = 5.797, p = 0.017$. 

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Prevalence of abuse in the current sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td><strong>Entire sample</strong></td>
<td></td>
</tr>
<tr>
<td>Any abuse</td>
<td>99</td>
</tr>
<tr>
<td>Physical abuse alone</td>
<td>49</td>
</tr>
<tr>
<td>Sexual abuse alone</td>
<td>12</td>
</tr>
<tr>
<td>Combined abuse</td>
<td>38</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
</tr>
<tr>
<td>Any abuse</td>
<td>75</td>
</tr>
<tr>
<td>Physical abuse alone</td>
<td>31</td>
</tr>
<tr>
<td>Sexual abuse alone</td>
<td>9</td>
</tr>
<tr>
<td>Combined abuse</td>
<td>35</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td></td>
</tr>
<tr>
<td>Any abuse</td>
<td>24</td>
</tr>
<tr>
<td>Physical abuse alone</td>
<td>18</td>
</tr>
<tr>
<td>Sexual abuse alone</td>
<td>3</td>
</tr>
<tr>
<td>Combined abuse</td>
<td>3</td>
</tr>
</tbody>
</table>
Chi-square analyses were subsequently conducted separately for males and females to test for differences among abuse groups in terms of specific Axis I diagnostic categories—major depressive disorder (MDD), bipolar disorder (BD), panic disorder (PD), posttraumatic stress disorder (PTSD), and substance dependence disorder (SDD). As can be seen in Table 2, abuse history was found to be significantly related to diagnosis of MDD for females, \( \chi^2(2) = 8.329, p = 0.016 \). Similarly, abuse group was found to be significantly related to diagnosis of panic disorder for females, \( \chi^2(2) = 7.459, p = 0.024 \). No significant relationships between abuse and the diagnoses of BD, PTSD or SDD were found for males or females.

**Psychological distress**

The MPI, containing the Affective Distress (AD) and Life Control (LC) scales, was completed by all patients during the pre-treatment period. The BDI and BAI were completed by 159 patients, with three patients (all males) not completing these inventories. Two-way ANOVAs were conducted independently on each index of psychological distress. Perceived life control was found to differ significantly among the abuse groups, regardless of gender, \( F(2, 156) = 4.763, p = 0.039 \). Specifically, patients with one type of abuse were found to perceive less life control than patients with no history of abuse. Further, when the two abuse groups were collapsed into one abuse group, a two-way ANOVA showed a significant effect for abuse history on both the LC and AD scales. Patients with any history of abuse were found to have less perceived life control, \( F(1, 158) = 7.425, p = 0.025 \), and greater affective distress, \( F(1, 158) = 5.793, p = 0.025 \), than patients with no history of abuse, regardless of gender.

**Health care utilization**

Information on health care utilization was obtained from the general information questionnaire, which was completed by 117 patients (80 females and 37 males). Health care utilization information was unavailable for 45 patients, because they did not complete the portion of the questionnaire containing this information. Again, when the two abuse groups were collapsed into one abuse group, independent two-way ANOVAs for each dependent measure of health care utilization yielded significant differences between abuse groups for ER visits, \( F(1, 114) = 4.648, p = 0.012 \). Specifically, abused patients were found to report a greater number of ER visits during the pretreatment period than nonabused patients (2.276 vs. 0.903), regardless of gender.

**TREATMENT OUTCOMES: IMMEDIATELY POST-TREATMENT**

Of the 162 chronic pain patients, 143 (88.3%) successfully completed the treatment programme. There were eight non-completers in the group of patients with no history of abuse, six non-completers in the group with a history of one type of abuse, and five non-completers

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Chi-square analyses for specific axis I diagnostic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>No Abuse</strong></td>
</tr>
<tr>
<td><strong>Major depressive disorder</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>17</td>
</tr>
<tr>
<td>Females</td>
<td>21</td>
</tr>
<tr>
<td><strong>Panic disorder</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>5</td>
</tr>
<tr>
<td>Females</td>
<td>3</td>
</tr>
<tr>
<td><strong>Bipolar disorder</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>1</td>
</tr>
<tr>
<td>Females</td>
<td>2</td>
</tr>
<tr>
<td><strong>PTSD</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>0</td>
</tr>
<tr>
<td>Females</td>
<td>2</td>
</tr>
<tr>
<td><strong>Substance dependence</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>5</td>
</tr>
<tr>
<td>Females</td>
<td>7</td>
</tr>
</tbody>
</table>

*Note: *Percentage within the abuse group who suffer from the disorder

336
in the group with a history of two types of abuse. Chi-square analysis indicated no significant relationship between programme completion status and history of abuse, $\chi^2 (2) = 1.920, p = 0.750$. Because non-completing patients were not tested at discharge, they were not included in the analysis of treatment effects.

**Pain and psychological distress measures**

The MPI was completed by 143 patients (98 females and 45 males) immediately following discharge from treatment. Two-way ANCOVAs, with pre-treatment scores as covariates, were conducted to determine whether there were differences among abuse groups and between males and females in reduction of MPI pain severity (PS), pain-related life interference (Int), AD, BDI scores and BAI scores, and in increase of MPI LC immediately following treatment. Analyses indicated no significant differences in improvement on these measures among abuse groups, or between males and females.

**TREATMENT OUTCOMES: 6 MONTHS POST-TREATMENT**

One hundred and two (72%) of the programme completers (79 females and 23 males) were contacted by phone at 6-months post-treatment, and were asked questions regarding health care utilization since leaving treatment, and were administered the brief screening version of the MPI. These patients also completed the mailed follow-up questionnaire containing the Beck inventories. Forty-one patients (23 females and 18 males) refused to participate in follow-up testing, did not return the examiner’s phone calls, or could not be reached by phone due to change of address or phone disconnection. Of the 41 patients who did not participate in follow-up treatment, 16 were in the nonabused group, 15 were in the one type of abuse group, and 10 were in the two types of abuse group. Chi-square analysis revealed no significant differences among abuse groups in participation in follow-up testing at 6-months post-treatment.

**Health care utilization (HCU)**

Two-way ANCOVAs, with pre-treatment HCU scores as the covariate, were conducted to determine whether there were significant differences in reduction of HCU among abuse groups and between males and females. Analyses showed no significant differences in reduction of any of the four indices of HCU among the abuse groups, or between males and females.

**Pain and psychological distress measures**

Two-way ANCOVAs, with pre-treatment scores as covariates, were conducted to determine whether there were differences among abuse groups and between males and females in improvement in MPI PS, Int, AD, LC, BDI and BAI scores; again, no significant differences in improvement in these measures were found among abuse groups or between males and females.

**TREATMENT OUTCOMES: 1 YEAR POST-TREATMENT**

Eighty-four (59%) of the programme completers (62 females and 22 males) were contacted by phone at 1-year post-treatment, and were asked questions regarding return to work and health care utilization since leaving treatment, and were administered the brief screening version of the MPI. These patients also completed the mailed follow-up questionnaire containing the Beck inventories. Fifty-nine patients (36 females and 23 males) were dropped from analyses due to an inability to locate them at the 1-year follow-up period. Of the 59 patients who did not participate in follow-up treatment, 20 were in the nonabused group, 23 were in the one type of abuse group, and 16 were in the two types of abuse group. Chi-square analysis indicated no significant differences among abuse groups in availability for follow-up questioning.

**Health care utilization**

Two-way ANCOVAs, with pre-treatment HCU scores as covariates, were conducted to determine whether there were significant differences in reduction of HCU at 1-year post-treatment among abuse groups and between males and females. Analyses showed no significant differences in reduced health care visits, hospitalizations, surgeries or emergency room visits among the abuse groups, or between males and females.

**Pain and psychological distress measures**

Two-way ANCOVAs, with pre-treatment scores as covariates, were conducted to determine whether there were differences among abuse groups and between males and females in improvement in MPI PS, Int, AD, LC, and BDI and BAI scores at 1-year post-treatment. Analyses indicated no significant differences in improvement on any of these variables among abuse groups, or between males and females.
PREDICTION OF ABUSE HISTORY

As noted in the previous results, abused and nonabused patients were found to differ significantly with regard to several demographic and psychosocial descriptors. Analysis of demographic variables revealed that females were significantly more likely to have an abuse history. Analysis of DSM-IV diagnoses revealed that abused patients had significantly greater Axis I diagnoses than nonabused patients. Abused female patients were significantly more likely than their nonabused counterparts to suffer major depressive disorder and PD. In terms of psychological distress, analyses revealed that abused patients reported higher AD and lower LC on the MPI than nonabused patients. Abused patients were also found to report a significantly higher number of ER visits at pre-treatment than nonabused patients.

All of the above variables were entered into a forward stepwise logistic regression, utilizing the likelihood-ratio test for removal of variables, to determine which array of variables could best predict the presence of an abuse history on the basis of initial evaluation findings. An alpha level of 0.10 was used for inclusion, and variables were excluded if they did not contribute at the 0.20 level. Several subjects were not included in the analysis due to missing data on one or more variables, resulting in a sample size of 135. This procedure ultimately resulted in a model with three predictor factors: gender (female), higher number of Axis I diagnoses, and higher pre-treatment MPI AD. The regression equation significantly fitted the data, \( \chi^2(3) = 10.039, p = 0.0182 \), and this model correctly classified the presence or absence of an abuse history 69.63% of the time. However, it exhibited a specificity (i.e. correctly classified non abuse cases) of 22.22% of cases and sensitivity (i.e. correctly classified the subjects with a history of abuse) of 93.33%. A total of 41 patients were misclassified, with 35 patients belonging to the nonabused group and 6 belonging to the abuse group. Table 3 lists the variables included in this model, along with their respective regression coefficients, Wald statistics, degrees of freedom, and alpha levels.

### Discussion

It should be stated at the outset that important demographic differences exist between the population of chronic pain patients examined in this study and the population of chronic pain patients examined in other studies linking chronic pain and abuse. As an example, McMahon investigated the effects of childhood sexual abuse on treatment outcomes of a population of pain patients who were generally blue-collar, working-class individuals who had experienced work-related injuries to the lower back. Those patients had been disabled for roughly 15–18 months. A majority of patients in the current study were relatively highly educated, middle to upper-middle class individuals who had previously been employed in skilled trade, clerical, managerial, or professional jobs. The patients in this study were diagnostically heterogeneous and many were unemployed for longer than 2 years.

It should also be noted that the criteria for entry into treatment, as well as the type of treatment provided, differ in important ways from other chronic pain treatment programmes. For example, all patients in McMahon’s study experienced work-related injuries, and the primary goal of treatment was restoring functioning to return to work. In the present study, patients were included who suffered pain originating from sources other than work-related injuries. Many patients were referred for treatment because they failed to progress in other tertiary care settings, or because they suffered comorbid psychiatric conditions intractable to other treatments. The extensive period of disability in this patient population relegated restoring vocational functioning to secondary importance. Often, the primary goal of treatment was to restore basic self-care tasks and activities of daily living. These aforementioned demographic and treatment setting differences may, therefore, limit the generalizability of the findings of the current study. Replication of results in other chronic pain populations and other treatment settings will be important in future studies.

Although this study did not provide a community-based comparison group in the evaluation of the prevalence of abuse, the results indicate that the frequency of

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>Significance</th>
<th>R</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-0.823</td>
<td>0.4059</td>
<td>4.1132</td>
<td>1</td>
<td>0.0426</td>
<td>-0.1109</td>
<td>0.4391</td>
</tr>
<tr>
<td>Number of axis I Diagnoses</td>
<td>0.3684</td>
<td>0.2052</td>
<td>3.2217</td>
<td>1</td>
<td>0.0727</td>
<td>0.0843</td>
<td>1.4453</td>
</tr>
<tr>
<td>Pre-treatment MPI Affective distress</td>
<td>0.3138</td>
<td>0.1814</td>
<td>2.9932</td>
<td>1</td>
<td>0.0856</td>
<td>0.0760</td>
<td>1.3686</td>
</tr>
</tbody>
</table>
lifetime sexual and/or physical abuse among the patients in this study was 61%. This is consistent with the frequency rates (56% to 66%) for abuse among chronic pain clinic patients reported in the literature.\textsuperscript{28, 31, 47} The sole demographic variable significantly differentiating abused patients from those without a history of abuse was gender. Sixty-six per cent of female patients in this study reported a history of abuse, while 48% of males reported such a history. Among the 60 patients reporting either sexual or physical abuse, 65% were female, while 35% were male. Of those males, 18 reported a history of physical abuse (without sexual abuse), while only three reported a history of sexual abuse (without physical abuse). More striking was the finding that, among the 38 patients who reported a combined history of abuse, 92% were female and only 8% were male. That so few males reported a history of sexual abuse is not surprising in light of the repeated finding in the literature that females are more often found to be the victims of sexual abuse. A majority of studies into the effects of sexual abuse on pain patients have focused exclusively on females, because of underreporting by males of such a history.

It was hypothesized that patients with a history of abuse would report higher pain severity and pain-related life interference than their nonabused counterparts. Females with a combined history of abuse were found to report greater pain-related life interference than females with no history of abuse. This finding is similar to results reported by Scarcini and colleagues,\textsuperscript{28} who found that female pain patients with histories of both sexual and physical abuse displayed lower pain thresholds, higher somatic anxiety, and a greater tendency to engage in self-blame and other catastrophizing thoughts about pain than females with a history of one type of abuse or no abuse. They proposed a model in which previous sexual and physical trauma interferes with the patient’s ability to cope effectively with further stressors, including the stress of pain; and these patients, therefore, find pain more disruptive than patients without a history of abuse. In the case of this study’s findings, abused women did not necessarily report higher pain levels, but reported that they found pain more disruptive to their lives. The hypothesis that abused patients would have a greater number of lifetime Axis I diagnoses was also supported for both males and females in this study. The finding of a greater total number of diagnoses is consistent with results found by Scarcini and colleagues,\textsuperscript{28} and McMahon and associates.\textsuperscript{48}

It was also expected that abused patients would report higher levels of psychological distress than nonabused patients. This finding was supported for both males and females. Abused patients were found to report higher AD and lower LC on the MPI. These results are consistent with findings by Linton et al.\textsuperscript{23} and Spertus et al.,\textsuperscript{49} who found higher psychological distress, in terms of MPI AD and LC in abused pain patients. These authors concluded that exposures to traumatic events may alter patients’ ability to manage their emotional responses to stressful circumstances, such as the stress of chronic pain. They may not use effective coping strategies in response to this pain stressor (e.g. abused patients may feel unable to control their pain symptoms and may believe their pain will persist).

Results also revealed that patients with a history of abuse were found to have a greater number of one health care utilization index—emergency room visits. However, abused patients were not found to utilize a greater number of other indices of health care utilization—health care visits (visit to any practitioner for treatment of any aspect of pain), hospitalizations or surgeries—than their nonabused counterparts. The finding of a greater number of ER visits among abused patients, but not other modes of health care utilization, may reflect the urgency of care implied by use of the ER. There is reason to believe that the urgency in this equation is due to the psychological distress associated with chronic pain, rather than the pain itself. A study by Walker and colleagues\textsuperscript{60} showed that female HMO members with a history of abuse made more frequent visits to the ER, even when controlling for chronic medical illness. As discussed earlier, patients who have been traumatized by sexual and/or physical abuse may feel helpless to cope with further stressors, such as chronic pain. These patients may find episodes of intense pain more psychologically distressing than their nonabused counterparts. Because of this, they may not be as well equipped as nonabused patients to perform self-soothing functions or utilize chronic pain management techniques learned to date to ease intense pain in the interim between doctors’ office visits. They may, therefore, be more likely to use emergency care resources to relieve pain during such episodes.

Several authors have linked abuse history with the phenomenon of learned helplessness.\textsuperscript{35, 51, 52} Wilson and associates\textsuperscript{52} studied the relationship among severity of abuse, learned helplessness and help-seeking behaviors in adult female victims of spousal abuse. They found that women with high levels of self-reported abuse and learned helplessness were more likely to exhibit help-seeking behaviors, such as visits to shelters, support groups, and the emergency room.

As discussed thus far, several psychosocial descriptors were found to significantly distinguish abused patients
from their nonabused counterparts. Of those descriptors, three were found to significantly predict abuse history in this chronic pain population: to be female, to have an elevated number of psychiatric diagnoses, and to have an elevated AD score on the MPI. Development of logistic regression equations has proven useful in providing the opportunity to develop shorter and more focused evaluations. In this case, the hope is to predict abuse history in chronic pain patients. Although the changes or sensitivity of correctly classifying a patient as nonabused using this model was modest at best, the chances of correctly classifying a patient as abused was high. If the goal of pre-treatment evaluations is to ensure that the presence of abuse history is detected, then a highly sensitive model is preferable to a highly specific one. In other words, it is more helpful to the patient if one inquires into an abuse history with a patient lacking one than to fail to inquire into an abuse history with a patient who has in fact been abused. This is true for most screening instruments, for which the principal goal is to maximize sensitivity. The present study yielded a high sensitivity (93.33%).

Immediate treatment outcomes were measured in terms of programme completion, reduction of pain and pain-related life interference, and reduction of psychological distress. Overall, 88.3% of patients completed the programme, with no relationship found between completion status and abuse history. Of this final cohort, it was found that patients with a history of abuse had similar success in terms of programme completion, as well as pain and psychological distress reduction relative to patients with no history of abuse. All groups made positive gains in pain and psychological stress reduction, and pre-treatment scores were significantly related to the amount of gain made. This finding is consistent with results by McMahon48 who did not find a significant relationship between abuse history and immediate treatment effects. Those authors concluded that chronic low back pain patients with a history of childhood abuse are capable of adhering to a functional restoration treatment regimen, and they do benefit from the rehabilitation programmes designed for them. It appears the same conclusion may be drawn about the diagnostically heterogeneous group of chronic pain patients studied in the current investigation. Those patients with a history of lifetime physical and/or sexual abuse are capable of adhering to, and benefiting from, a chronic pain rehabilitation programme.

Patients with an abuse history made also similar improvements in terms of reduced health care utilization as their nonabused counterparts at six months or one year post-treatment. This is in contrast to findings by McMahon,48 who found a greater number of repeat surgeries to injured areas in abused patients compared to nonabused patients. Contrasts between results reported by those authors and results of the current study may be accounted for by differences in the type of health care utilization measured. McMahon and colleagues48 used a more specific measure of health care utilization—surgeries to the same injured area as that prompting treatment. In the current study, patients were asked to report health care utilization for all problems related to pain, in terms of total health care visits, hospitalizations, surgeries, and emergency room visits. This ‘broad-stroke’ measure of health care utilization may have masked any differences between groups in use of health care services for treatment of a specific pain problem. It should also be noted that, overall, we had a 72% follow-up rate at 6-months, and 59% at 1-year. The major reason for non follow-up was the inability to contact because of change of residence. These were quite acceptable follow-up rates, given the transient nature of our population.

It was also found that all groups maintained positive gains in pain and psychological stress reduction at 6-months and 1-year following treatment, and pre-treatment scores were significantly related to the amount of gain made. This finding appears to represent a unique contribution to the available literature on treatment outcome factors associated with abuse in chronic pain patients. There is a paucity of research on the long-term psychological gains made by abused chronic pain patients after undergoing treatment in an interdisciplinary rehabilitation setting. The lack of differences between abused and nonabused patients in maintenance of long-term psychological gains may also be attributed to positive treatment effects. It is possible that these results reflect the benefits of tailoring treatment to specific psychological needs of each patient. Of course, due to the lack of similar investigations, it is not possible to conclude whether these results are typical of the maintenance of psychological gains by abused patients following treatment in other interdisciplinary rehabilitation programmes. To clarify the factors involved in the maintenance of treatment gains, investigations into long-term treatment outcomes that control for these variables will be important in future studies.

In conclusion, the prevalence of abuse in the current study was comparable to those found in other chronic pain populations. In most cases, the current study failed to show that the effects of combined sexual and physical abuse were more detrimental to the victims than the impact of one type of abuse alone. The study also demonstrated that the impact of abuse in a particular
group of chronic pain patients is measurable on several psychosocial dimensions. First, females with a combined history of abuse were found to report greater pain-related life interference than females with no history of abuse. Second, patients with any history of abuse were found to have a significantly greater number of DSM-IV Axis I diagnoses than patients with no history of abuse. Third, abused females had greater rates of major depressive disorder and PD than nonabused females. Fourth, abused patients reported greater affective distress and less perceived life control than nonabused patients. Fifth, abused patients reported a greater number of ER visits in the 6 months prior to treatment than nonabused patients. Finally, a model consisting of gender (female), a higher number of Axis I diagnoses, and higher affective distress was found to be a sensitive, if not specific, predictor of abuse history.

Of special importance, it was found that patients with an abuse history performed just as well as nonabused patients on several immediate treatment outcome measures. It may be that, because patients with a history of abuse exhibit more psychological distress, they are monitored more closely than nonabused chronic pain patients on treatment compliance. Although this cannot be verified, it seems a likely explanation because each patient’s rehabilitation programme is individually designed. Patients with more psychological distress received more frequent and intensive individual psychotherapy. The evidence from the current study implies that chronic pain patients with an abuse history can successfully complete a rehabilitation programme for treatment of their chronic pain syndrome if the programme is designed to treat their psychological distress. Moreover, this also carries over to treatment outcome. A history of abuse did not negatively impact long-term treatment outcomes in this population of chronic pain patients.

Acknowledgements

This research was supported in part by Grants No 2K02-MH01107, 2R01-MH46452 and 2R01-DE010713 from the National Institutes of Health.

References