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Male and Female Chronic Pain Patients Categorized by DSM-III Psychiatric Diagnostic Criteria

David A. Fishbain, Myron Goldberg, B. Robert Meagher, Renee Steele
and Hubert Rosomoff

*Neurological Surgery, University of Miami School of Medicine, Comprehensive Pain and
Rehabilitation Center, South Shore Hospital, Miami Beach, FL 33139 (U.S.A.)*

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Summary

Two hundred and eighty-three chronic pain patients, consecutive admissions to the Comprehensive Pain Center of the University of Miami School of Medicine, received an extensive psychiatric evaluation based upon the American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders (DSM-III) criteria and flowsheets. All patients received the following type of diagnoses: DSM-III axis I; DSM-III axis II, and personality type. The distribution of assigned diagnoses for the entire patient sample was reviewed and a statistical comparison between male and female patients was performed with regards to the prevalence of each diagnosis. Anxiety syndromes and depression of various diagnostic types were the most frequently assigned axis I diagnoses with over half the patient sample receiving each of these diagnoses. Males were significantly overrepresented in the axis I diagnoses of intermittent explosive disorders, adjustment disorders with work inhibitions, and alcohol abuse and other drug dependence, while females were significantly overrepresented in disorders of current depression of various diagnostic types and somatization disorders.

58.4% of the patients fulfilled criteria for axis II personality disorder diagnoses. The most frequently personality disorders found in the patient group were dependent (17.4%), passive aggressive (14.9%), and histrionic (11.7%). Males were significantly overrepresented in paranoid and narcissistic disorders while females were overrepresented in histrionic disorder. The most frequent personality types found in the patient group were compulsive (24.5%) and dependent (10.6%). All personality types were similarly distributed between the sexes. The results of the present study were compared to a previous study of DSM-III diagnoses in chronic pain patients and are discussed in terms of the prevalence of DSM-III diagnoses in the general

population. Questions are raised as to the applicability of certain DSM-III diagnoses in the chronic pain population.

Introduction

It has long been recognized that chronic pain patients suffer from depression, anxiety, and various other psychiatric syndromes [29]. Although a number of descriptive studies and research studies using research diagnostic criteria have tried to identify the psychiatric diagnoses associated with chronic pain [26], only a few have used operational criteria for making psychiatric diagnoses [12]. To date, subsequent to Reich's suggestion [21] on the potential usefulness of the DSM-III [1] to categorize chronic pain patients, 5 studies have utilized DSM-III nomenclature: in children with recurrent abdominal pain [2]; in patients with atypical facial pain [23]; in a study of depression [25]; in a 'mixed group' of 43 chronic pain patients (i.e., pain in various body loci) [22]; and in a group of 37 highly selected chronic pain patients evaluated by the use of the National Institute of Mental Health Interview Schedule (DIS) [12]. In this latter study patients with narcotic drug abuse/dependency, histories of extensive psychiatric problems and treatable medical problems were excluded. None of these studies statistically compared male and female chronic pain patients for the types of DSM-III disorders identified; the lack of statistical comparisons probably can be attributed to the small number of patients evaluated.

There is some current knowledge on the sex distribution of some DSM-III disorders within the general population [1,24]. Because of this it was thought that a comparison study between male and female chronic pain patients for the prevalence of DSM-III disorders in chronic pain, could yield some potentially interesting data. The study described below sought to statistically compare 156 male and 127 female 'mixed' chronic pain patients for the types of DSM-III disorders identified and to in part replicate the studies of Reich et al. [22] and Katon et al. [12]. In addition, males and females who were not assigned a DSM-III axis II disorder were compared in the present study with regards to prevalence of personality types.

Methods

The Comprehensive Pain Center at the University of Miami School of Medicine is staffed by the following disciplines: neurological surgery; psychiatry; psychology; vocational rehabilitation; physical therapy; occupational therapy; recreational therapy; ergonomics; and nursing. Each of these disciplines evaluates each of the referred patients during a 3 day evaluation period. In a 1 year period (September 1981 through September 1982), 283 chronic pain patients completed the 3 day evaluation process. These patients had the following general characteristics: (1) pain duration longer than 2 years; (2) poor response to conventional treatment

(e.g., surgery) for their pain; and (3) financial ability (e.g., third-party, self-pay) to pay medical costs of the program. No patients were eliminated from the 3 day evaluation process for psychiatric reasons. In this group of mixed chronic pain patients, the primary location of pain was distributed as follows: low back 73.1%; cervical (neck) 17.0%; other (abdominal, chest, etc.) 7.9%; and headache 1.8%. The headache category identified here consists of only those individuals who reported head pain whose etiology was not related to cervical bony or muscular pathology. Many, if not most, of the patients comprising the cervical pain group also reported headaches. As such, the representation of headache patients in our overall subject sample was considerably higher than 1.8%.

For all patients, organic diagnoses were *independently* made by the neurosurgeon and physiatrist. Diagnoses were determined through a review of the medical history, previous and current diagnostic test results as well as by physical examination. In the physical examination a great deal of emphasis was given to the soft tissue findings indicative of myofascial syndromes as described by Travell [28,31]. Congruency between the neurosurgeon and physiatrist with regards to assigned organic diagnoses was obtained in over 95% of the cases. On the 3rd and final day of the evaluation period, for each patient, all organic diagnoses were reviewed by the physician staff in a regularly held conference. The primary organic treatment diagnosis was assigned and secondary organic diagnoses were recorded. For this study all organic diagnoses, primary and secondary for all 283 patients, were coded on a standardized instrument specifically developed for that purpose. * The percentage of the 283 patients receiving each primary treatment diagnosis was calculated and is presented in Table I. Because myofascial pain syndrome comprised the most frequent primary treatment diagnosis (85%), secondary diagnoses were calculated for the patients with this primary diagnosis only and their frequencies are presented in Table II.

Each of these patients was also subjected to a 2 h detailed, semistructured psychiatric interview based on DSM-III flowsheets [1]. Additionally, patient's past history, personal history and family history were obtained followed by a standard mental status examination. The psychiatric interview was done by a senior psychiatrist who had taught DSM-III nomenclature to psychiatric residents. All DSM-III diagnostic guidelines were strictly followed. Conversion disorder (somatosensory) was entertained only if the following criteria were fulfilled: (1) the patient demonstrated non-anatomical or non-dermatomal sensory findings on physical examination (anesthesias and/or paresthesias) satisfying criterion A of the DSM-III [1] for conversion disorder; (2) the neurosurgeon and physiatrist were congruent on the results of their *independent* sensory examination demonstrating non-dermatomal sensory changes (this was an additional check on the ability of the patient to satisfy criterion A); (3) positive physical findings were present, e.g., normal muscle strength and normal movement without atrophy indicating that the sensory abnormalities were not derived from organic disease (this was an additional check on the ability of

* Available on request.

the patient to satisfy criterion A); and (4) any organic disease which could be the cause of the non-dermatomal sensory abnormalities was excluded (satisfying criterion D for conversion disorder of the DSM-III [1]). As pointed out above, 85% of the patients received a primary organic treatment diagnosis of myofascial syndrome. In that myofascial syndrome is not a disease which causes non-dermatomal sensory abnormalities, a large number of patients became candidates for a DSM-III conversion diagnosis through satisfaction of criterion D (the symptom cannot be explained by a known physical disorder or pathophysiologic mechanism) [1]. Criteria B, C and F, the psychological criteria, were investigated through the psychiatric examination. This approach more than satisfied all the criteria for conversion as set up in the DSM-III but also fulfilled all the criteria for the diagnosis of conversion as delineated by Weintraub [34] including the 'positive signs of hysteria' criteria.

In light of the difficulty in making a diagnosis of personality disorder as outlined by Drake and Vaillant [7], a careful history of social and occupational functioning over time was taken, in addition to a history of symptoms and behaviors. If a patient did not fulfill the DSM-III criteria for a diagnosis on axis II (personality disorder) he/she was assigned a personality type diagnosis according to the categories described by Kahana and Bibring [11]. All diagnoses were assigned independent of any knowledge of psychological test data. The assigned DSM-III diagnoses were then coded on a standardized instrument specifically developed for this study. * Because this was essentially a descriptive study, there was no attempt by another psychiatrist to replicate the DSM-III diagnoses. The degree to which males and females differed on each assigned DSM-III diagnosis was assessed by chi-square analysis. In addition, differences between male and females with regards to age, race and workman's compensation status were statistically evaluated. For all statistical analyses, significance was set at $P < 0.05$. Yate's correction for continuity was used in all chi-square analyses [6].

Results

Among the 283 chronic pain patients evaluated by the Comprehensive Pain Center there were 156 males and 127 females. Males and females did not differ significantly with regards to age or race. The mean age of males was 47.6 ± 16.3 years compared to 51.5 ± 16.6 years for females. Whites predominated each sample, comprising 94.2% of the males and 91.3% of the females. A significant difference between males and females was found for workman's compensation status ($\chi^2 = 22.9$, $df = 1$, $P < 0.0001$); workman's compensation patients comprised 64.7% of the males but only 34.4% of the females.

The distribution of the total number of axis I diagnoses by males and females was as follows: 5.7% of the males versus 4.7% of the females had no diagnoses on axis I; 35.9% of the males versus 33.9% of the females had one diagnosis on axis I;

* Available on request.

TABLE I

PRIMARY ORGANIC TREATMENT DIAGNOSES (N = 283)

		%
Myofascial syndrome		85
Low back only	61	
Low back and neck	14	
Neck only	10	
Deafferentation		6
Unknown etiology		2
Degenerative disease		
Spinal stenosis		2
Hips/other		2
Radiculopathy		1
Malignancy		1
Miscellaneous		1

TABLE II

FREQUENCY PERCENTAGES OF SECONDARY ORGANIC DIAGNOSES IN CHRONIC PAIN PATIENTS WITH A PRIMARY TREATMENT DIAGNOSIS OF MYOFASCIAL SYNDROME

Some patients may have more than one secondary organic diagnosis. N = 283.

	%
Degenerative disease of the spine	35
Exogenous obesity	29
Radiculopathy – residual	20
Spondylolisthesis clinically insignificant	16
Scoliosis	10
Pelvic list	7
Kyphosis	7
Peripheral neuropathy	6
Myofascial headache	6
Deafferentation	3
Deconditioned	3
Lordosis	2
Spondylolisthesis clinically significant	2
Myelopathy	2
Cauda equina syndrome	2
Degenerative disease of the spine – spinal stenosis	1
Spondylolysis	1
Intermittent claudication	1
Rheumatoid arthritis	1
Flat feet	1
Malignancy	<1
Cluster headaches	<1

TABLE III

DSM-III AXIS I DIAGNOSES FOR 283 PATIENTS WITH CHRONIC PAIN

Category and diagnosis	Males (N = 156) (%)	Females (N = 127) (%)	Total (N = 283) (%)
<i>Affective disorders</i>			
Major depression and bipolar disorder in remission	0.6	2.4	1.5
Current major depression single and recurrent	3.8	5.5	4.6
Dysthymic disorder	20.5	26.8	23.3
Current major depression single and recurrent plus cyclothymic disorder plus dysthymic disorder	25.0	33.4	28.2
Adjustment disorder with depressed mood	25.6	31.5	28.3
Total number of patients suffering from current depression (major depression and dysthymic disorder and cyclothymic disorder and adjustment disorder with depressed mood)	49.9 *	63.8 *	56.2
<i>Somatoform disorders</i>			
Somatization disorder	0.6 **	7.9 **	3.9
Conversion disorder	42.3	32.3	37.8
Psychogenic pain	0.6	0.0	0.3
Hypochondriasis	0.6	0.8	0.7
<i>Anxiety disorders</i>			
Agoraphobia with panic attacks and simple phobia	1.2	3.2	2.1
Generalized anxiety disorder	15.4	15.0	15.2
Obsessive compulsive disorder	0.6	1.6	1.1
Post-traumatic stress disorder acute and chronic	1.2	0.8	1.1
Adjustment disorder with anxious mood	40.4	45.7	42.8
Total number of patients suffering from anxiety (anxiety disorders and adjustment disorder with anxious mood)	58.8 **	66.3 **	62.5

TABLE III (continued)

Category and diagnosis	Males (N = 156) (%)	Females (N = 127) (%)	Total (N = 283) (%)
<i>Organic mental disorders</i>			
Delirium	0.6	0.0	0.4
Dementia	5.1	11.0	7.8
<i>Substance use disorders</i>			
Current alcohol abuse/dependence	5.7	2.4	4.3
Alcohol abuse/dependence in remission	10.3	3.9	7.4
Current drug dependence (opioids, barbiturates, sedatives and cannabinoid)	14.7 *	5.5 *	10.6
Opioid dependence in remission	0.6	0.0	0.4
Total current alcohol and other drug dependence	20.4 **	7.9 **	14.9
<i>Intermittent explosive disorder</i>	16.7 ****	1.6 ****	9.9
<i>Adjustment disorder with work inhibition</i>	17.9 **	7.1 **	13.0
<i>Uncomplicated bereavement</i>	2.6	4.7	3.5
<i>Marital problem</i>	7.7	8.7	8.2

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; **** $P < 0.0001$.

TABLE IV

DSM-III AXIS II DIAGNOSES FOR 281 PATIENTS WITH CHRONIC PAIN

Category and diagnosis	Males (N = 96) (%)	Females (N = 70) (%)	Total (N = 166) (%)
Personality disorders	62.3	55.1	59.0
Paranoid	5.1 *	0.0 *	2.8
Schizoid	3.2	0.0	1.7
Compulsive	7.7	5.5	6.7
Histrionic	4.5 ****	20.5 ****	11.7
Dependent	21.2	12.6	17.4
Narcissistic	4.5 *	0.0 *	2.4
Borderline	0.0	2.4	1.0
Passive aggressive	15.4	14.2	14.9

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; **** $P < 0.0001$.

TABLE V

PERSONALITY TYPE DIAGNOSES FOR 281 PATIENTS WITH CHRONIC PAIN

Category and diagnosis	Males (N = 58) (%)	Females (N = 57) (%)	Total (N = 115) (%)
Personality types	37.6	44.8	40.9
Paranoid	0.6	0.8	0.7
Compulsive	23.7	25.2	24.5
Histrionic	1.9	3.9	2.8
Dependent	9.0	12.6	10.6
Narcissistic	1.3	0.0	0.7
Passive-aggressive	0.6	2.4	1.4

33.3% of the males versus 34.6% of the females had 2 diagnoses on axis I; 16.0% of the males versus 18.9% of the females had 3 diagnoses on axis I; and 9.0% of the males versus 7.9% of the females had more than 3 diagnoses on axis I. In terms of the mean number of axis I diagnoses assigned per patient, males were assigned 1.94 ± 1.03 diagnoses and females were assigned 1.99 ± 1.05 . 62.3% of the men versus 55.1% of the females received a diagnosis on axis II. None of these differences concerning the distribution of total assigned diagnoses were statistically significant.

Table I presents all the primary organic treatment diagnoses for the 283 patients while Table II presents the secondary organic diagnoses for all patients with a primary treatment diagnosis of myofascial pain syndrome. Table III presents the DSM-III, axis I psychiatric diagnoses for all 283 patients divided into male and female groups. Tables IV and V present personality disorder and personality type diagnoses for 281 of these patients (2 patients did not receive an axis II or personality type diagnosis), respectively. For the comparison between males and females, a separate chi-square analysis was performed for each diagnosis. Of the analyses performed 10 were significant. The significant diagnoses are delineated on the tables by asterisks *. At $P < 0.05$ level, 3 of the total of 56 comparisons could be expected to be significant due to chance alone. As such, all results significant near the 0.05 level should be interpreted with caution.

Discussion

Organic diagnoses

As noted in Table I, all forms of myofascial syndrome were the most frequent primary organic treatment diagnoses: 85%. Acute radiculopathy represented only 1% of the patient sample. Only 2% of the sample had pain of unknown etiology.

* χ^2 values and P values for each diagnosis are available on request.

Degenerative disease of the spine (35%) was the most frequent secondary organic diagnoses found in myofascial syndrome patients. This was followed by exogenous obesity (29%) and residual radiculopathy at 20%.

It is the belief of the authors that the delineation of the behavior syndromes associated with chronic pain by the DSM-III cannot be adequately done unless the organic diagnoses are determined and described. Neither Reich et al. [21] nor Katon et al. [12] addressed two important questions in reference to this problem: was a careful soft tissue examination done in order to rule out a commonly missed organic cause of chronic pain (myofascial syndrome) [10,20,28] and what was the percentage of this organic diagnosis in their sample? This issue becomes extremely important when one deals with the diagnosis of psychogenic pain, as described below.

The authors also believe that future psychiatric diagnostic studies using operational criteria and future psychological studies using such tools as the Minnesota Multiphrase Personality Inventory should not deal with chronic pain patients as one homogeneous group. Instead subgroups of organically defined patients such as ones with myofascial syndrome or pain of unknown etiology should be looked at specifically. This approach may lead to some interesting new data.

Affective disorders

Estimates of the incidence of depression in chronic pain patients range from 10% [19] to 90% [15]. The diagnostic nature of this depression is not clear. Some authors claim that this depression is not endogenous [11,13,29] while others point to a high incidence of unipolar depression and alcoholism in relatives of chronic pain patients and suggest that the pain-prone disorder should be viewed as a variant of depressive disease akin to Winokur's depression spectrum disease [3].

In our study, 56.2% of the patients suffered from *current depression* of various diagnostic types: major depression single episode; major depression recurrent; dysthymic disorder; cyclothymic disorder; and adjustment disorder with depressed mood. These same diagnoses were only found in 35% of Reich et al.'s [22] sample, a much lower figure. Although no percentages were presented by Katon et al. [12] for dysthymic disorder or adjustment disorder with depressed mood, 13.5% of his sample fulfilled DSM-III criteria for current major depression. In our study the combined diagnoses, indicating *current depression* (current major depression, dysthymic disorder, cyclothymic disorder and adjustment disorder with depressed mood), were significantly ($P < 0.05$) more likely to be found among female chronic pain patients. This finding compares favorably to recent findings on the lifetime prevalence rates in the United States for DSM-III psychiatric diagnoses which indicate that depressive disorders (major depressive episodes and dysthymic disorder) predominate in women [24]. Although the females in our sample were as likely as the males to suffer from major depressive episodes and dysthymic disorder, there is some indication that females with chronic pain are at a greater risk for depression much like their counterparts in the general population.

These results, however, should be viewed with some caution as male/female differences could be the result of financial criteria selection factors for inclusion into the pain unit 3 day evaluation process. Additionally, the prevalence of some

DSM-III psychiatric disorders may vary between sites [24] and the diagnosis of dysthymic disorder has been shown to have poor validity [1]. These 3 reasons could explain the large variation in the frequency of depressive diagnoses between pain programs and between our findings and those of Reich et al. [22].

In that the DSM-III diagnosis of major depressive episode relies heavily on somatic symptoms [1] which are either present or not present it is relatively easy to make. Five of the 8 symptoms in the 'B' criterion (poor appetite, insomnia, psychomotor agitation/retardation, decreased libido, and loss of energy) involve somatic function. However, in chronic pain states, insomnia, agitation, loss of energy and decreased libido may be related to the underlying physical condition, i.e. pain. In this situation as in others like cancer, DSM-III does not make it clear how much discretion, if any, a clinician has in discounting somatic symptoms known or suspected of being unrelated to the etiology of depression [16]. This problem needs some resolution before meaningful comparisons can be made between pain centers for the prevalence of major depression in chronic pain populations. For our sample DSM-III criteria were strictly followed which was likely the case with the studies of Reich et al. [22] and Katon et al. [12].

Somatoform disorders, somatization disorder

3.9% of our total patient sample, 7.9% of the females and 0.6% of the males, fulfilled criteria [1] for somatization disorder. The difference between males and females was significant ($P < 0.01$). Similar results were reported by Reich et al. [22]. Five percent of Reich et al.'s [22] chronic pain patients, 12% of the females and 0% of the males fulfilled DSM-III criteria for somatization disorder. Katon et al. [12] found that 16.2% of his patients fulfilled DSM-III criteria for somatization disorder but did not present a breakdown by gender.

The recent lifetime prevalence studies for somatization disorder in the United States have established this disorder to be female dominant with approximately 1% of the women in the general population fulfilling DSM-III criteria for this disorder [24]. It is interesting that the results of both Reich et al.'s [22] study and our study indicate a greater incidence of this disorder in female pain patients than the prevalence percentage in the general population. Additionally in our population, of the 2% of patients who had a primary organic treatment diagnosis of pain of unknown etiology all had a DSM-III diagnosis of somatization disorder. In light of the difficulty in finding an etiology for their pains, as well as their strong tendency to somatize and develop conversion symptoms [17], patients with somatization disorder are difficult to manage in a chronic pain program as they very likely accentuate their pain and focus on it. In light of Reich et al.'s [22] and our findings on somatization disorder, chronic pain programs may need to increase their efforts at identifying this group of patients in order to improve their treatment.

Somatoform disorder, psychogenic pain

The DSM-III diagnosis of psychogenic pain disorder [1] is dependent on criterion B. The main part of this criterion states that: 'no organic pathology can be found to account for the pain.' Although Katon et al.'s [12] sample was highly selected for

'no treatable organic pathology,' they did not give a frequency for this disorder. 32% of Reich's [22] patients received the diagnosis of psychogenic pain disorder while 0.3% of our total sample fulfilled DSM-III criteria for this diagnosis. These major discrepancies, we believe, relate to the difficulties with the above criterion. In our sample, 85% of our chronic pain patients had physical findings compatible with an organic diagnosis of myofascial syndrome [10,28,31], a commonly missed cause of chronic pain [10]. It is not clear from Reich et al.'s [22] study if their chronic pain patients received a soft tissue examination to rule out the possibility of myofascial syndrome. We believe that a significant number of patients receiving a diagnosis of psychogenic pain disorder may actually be suffering from myofascial syndrome. Until this diagnosis is routinely excluded in chronic pain patients' physical examinations, it will be difficult to compare chronic pain patient populations for the incidence of psychogenic pain disorder.

In a situation where an organic diagnosis is not recognized as a cause of the pain, e.g., myofascial syndrome, the psychological criteria of the DSM-III for psychogenic pain also present some problems. Thus criteria C2 (pain enables an individual to avoid noxious activity) and C3 (pain enables individual to get support from environment otherwise not forthcoming) do not in any way discriminate an organic from a psychiatric disorder.

In support of our findings, other authors [10], although not providing statistical data, have noted the apparent lack of psychogenic pain disorder in chronic pain patients and have cautioned that this diagnosis is made far too freely.

Somatoform disorder, conversion disorder

DSM-III defines conversion disorder as a disturbance in physical functioning that suggests physical disease but which instead is apparently an expression of psychological conflict or need [1]. Classic conversion symptoms suggest neurological disease and are paralysis, aphonia, seizures, coordination disturbance, akinesia, dyskinesia, blindness, tunnel vision, anosmia, anesthesia, and paresthesia. Non-anatomical sensory findings (anesthesias and paresthesias) were found in 37.8% of our total sample. 42.3% of the men and 32.3% of the women had such findings; this difference was not statistically significant. Additionally, all these patients fulfilled the psychological diagnostic criteria for conversion disorder [1]. Only one additional male patient demonstrated a conversion paralysis. Thus, when anesthesias, paresthesias and paralysis were combined, 42.9% of the males and 32.3% of the females fulfilled DSM-III conversion criteria. This difference was not statistically significant.

Reich et al. [22] diagnosed 2% of their patients (1 male) as suffering from conversion disorder. This is a much lower figure than ours. These results are difficult to compare as Reich et al. [22] did not specify if non-anatomical sensory findings were looked for in the physical examinations or if they were even considered when psychiatric diagnoses were delineated. To our knowledge, no other study in the literature on chronic pain has reported as high a frequency of non-anatomical sensory loss as found in our sample. However, it is of some interest to note that results from a previous study on 150 disability benefit claimants, a group with

physical dysfunction somewhat similar to that of chronic pain patients (pain, limitation of motion, etc.), indicated that among the total sample of claimants, 50% had some degree of non-anatomical sensory loss [27]. Coupled with results of this latter study, the findings of our study suggest that conversion disorders of the non-anatomical sensory loss type may be extremely frequent in chronic pain patients. If future studies indicate that the frequency of non-anatomical sensory loss in chronic pain patients is as frequent as found in this study, one would then have to re-examine the validity of the somatosensory organic conversion criteria of the DSM-III. Additionally, there are few empirical data to confirm or refute the 'psychological criteria (criterion B)' [1] for the DSM-III diagnosis of conversion disorder [14]. Indeed, some authors [4] have questioned the validity of these criteria. Until these problems are resolved the diagnosis of conversion disorder should be interpreted with caution. Additionally, non-psychiatric physicians performing physical examinations on chronic pain patients may need to become aware of the frequency of non-anatomical sensory changes in these patients. Such knowledge would then decrease the suspicion surrounding these patients, thereby improving their treatment. Recent findings indicate that non-anatomical sensory abnormalities may have some neuroanatomical basis. Wall [32,33], for example, has found that while the majority of cells of the dorsal horn, substantia gelatinosa, lamina I restrict their receptive fields to some part of the dermatome, others extend outside their dermatomes to sometimes the whole leg. Thus, the whole issue of non-dermatomal sensory abnormalities and what this finding means may need some more research.

Anxiety disorders

Only 7% of Reich et al.'s [22] chronic pain patients received a DSM-III anxiety disorder diagnosis (post-traumatic stress disorder and adjustment disorder with mixed emotional features). However, in our study, 62.5% of the patients were found by DSM-III criteria to be suffering from current anxiety syndromes (agoraphobia with panic attacks, simple phobia, generalized anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder acute, post-traumatic stress disorder chronic, and adjustment disorder with anxious mood). As such, anxiety disorders comprised the most common behavioral syndrome among our sample of chronic pain patients. The discrepancy between the findings reported by Reich and those obtained in our study could be related to the small size of Reich's sample, differences in inclusion criteria for patient evaluation between pain programs, and differences between site prevalence rates for various DSM-III psychiatric disorders [24]. Katon et al. [12] found that 16.2% of their patients fulfilled DSM-III criteria for panic disorder. They did not give figures for any other anxiety disorder. The high incidence of panic disorders found by Katon et al. [12] for *one* anxiety disorder only would to some extent support our findings.

Recent work [24] indicates that the lifetime prevalence rates for some specific DSM-III anxiety disorders, namely, agoraphobia, simple phobia and panic disorder, are higher for women than men. However, in the present study, there was no difference in the distribution of these 3 anxiety disorders between male and females. This finding may be related to the low numbers of these 3 disorders identified

within our chronic pain sample. When, however, all anxiety disorders were combined with adjustment disorder and with anxious mood, females in our sample were more likely ($P < 0.01$) to manifest these anxiety disorders. These findings indicate a need for pain programs to better identify anxiety syndromes in female chronic pain patients in order to improve their treatment.

Substance use disorders

2.0% of the chronic pain patients of Reich et al. [22] and 5.4% of the chronic pain patients of Katon et al. [12] received DSM-III diagnoses of current alcohol abuse and dependence. In our study 4.3% of the chronic pain patients fulfilled criteria for these diagnoses. Males did not differ significantly from females on the prevalence of these diagnoses. This finding contrasts with the observation that in the general population, males have a greater lifetime prevalence rate for these diagnoses [24].

A notable percentage (7.4%) of our patients received the diagnosis of alcohol abuse or dependence in remission or were reformed alcoholics. This finding is supported by that of Katon et al. [12] who found an even greater incidence of reformed alcoholism: 35.1%. There was no statistical difference in the frequency of past alcohol abuse/dependence (reformed alcoholism) between male and female chronic pain patients. Unfortunately, no general population prevalence rates for these diagnoses are currently available and therefore no comparisons to the general population can be made. Why such a high percentage of our chronic pain patient sample are reformed alcoholics needs further investigation.

25.5% of Reich et al.'s [22] chronic pain patients and 24.3% of Katon et al.'s [12] chronic pain patients received a DSM-III diagnosis of current drug dependence other than alcohol. In our study, only 10.6% of the sample fulfilled the criteria for these diagnoses. The incidence of current non-alcohol drug dependence (opioids, barbiturates, sedatives, cannabinoids) was significantly greater in males ($P < 0.05$). Similarly, males in the general population have been found to have a significantly greater lifetime prevalence rate than do females of drug abuse and dependence [22].

When all *current* alcohol and drug abuse/dependence diagnoses were combined, male chronic pain patients were significantly ($P < 0.01$) overrepresented. Thus, male chronic pain patients appear to be at greater risk for having a current addiction problem.

Intermittent explosive disorder

DSM-III [1] defines intermittent explosive disorder as 'several discreet episodes of loss of control of aggressive impulses resulting in serious assault or destruction of property.' 9.9% of our patients fulfilled the DSM-III criteria for this disorder. None of Reich et al.'s [22] or Katon et al.'s [12] patients received this diagnosis. This difference could again be attributable to program selection criteria and to site prevalence differences [24].

Among our patients, males were much more likely ($P < 0.0001$) than females to fulfill DSM-III criteria for this disorder. Likewise, intermittent explosive disorder has been observed to be more common among males than females in the general population [1]. It should be recognized that patients prone to intermittent explosive

episodes have a tendency to become more explosive when using any toxic agent (e.g., alcohol) [1]. When in pain, these patients have a tendency to become more irritable which, coupled with their propensity towards alcohol use, increases the likelihood of explosion that may result in violence. As such, pain programs need to be able to identify these individuals in order to orient their psychopharmacological and psychotherapeutic efforts toward 'control' of this explosive behavior.

Adjustment disorder with work inhibition

Five percent of Reich et al.'s [22] chronic pain patients fulfilled DSM-III criteria for adjustment disorder with work inhibition. In our study, 13.0% of the patients received this diagnosis. Reich et al. [22] did not report the percent of his patients who were workman's compensation patients, while in our study, 51.6% of the patients had this status. It may be that workman's compensation patients were underrepresented in Reich's sample as compared to the present study. If so, a reduced percentage of patients with this disorder in Reich's sample would be expected.

Additionally, in our study, males were much more likely ($P < 0.01$) than females to fulfill the DSM-III criteria for this diagnosis. This finding is probably secondary to the greater likelihood ($P < 0.0001$) of males being a workman's compensation patient.

Marital problem

Swanson claims that chronic pain patients are characterized by a stable marital adjustment before the onset of their problem [30]. After the onset of the pain, both the marriage and sexual adjustment are a source of dissatisfaction in the *majority* of patients or their spouses [30]. However, Reich et al. [22] made the DSM-III diagnosis of marital problem in only 7% of their chronic pain patients. In our study, 8.2% of the chronic pain patients fulfilled criteria for this diagnosis, although approximately 90% of our sample complained of sexual difficulties secondary to the pain. It appears, therefore, that the incidence of marital problems in chronic pain patients, as predicted by Swanson [30], may be an over-estimation.

Schizophrenia

Reich et al. [22] did not find any patients in their sample fulfilling DSM-III criteria for *any form* of schizophrenia. The same results were obtained with our sample. However, according to lifetime prevalence studies [24] for the DSM-III diagnoses, schizophrenia/schizophreniform disorders are found in 1.1–2.0% of the general population. Thus, according to the above percentage, 3–6 patients of our patients should have had these diagnoses. Schizophrenia is, then, notable by its absence from the chronic pain population.

The above findings on the absence of schizophrenia are supported by results from a different type of study investigating psychiatric hospital patients [5]. In this study, complaints of pain were elicited in 38% of 227 consecutive psychiatric hospital admissions. Pain was often associated with anxiety, depression, alcoholism, and personality disorders, but less frequently associated with *schizophrenia*, mania,

mental retardation, organic brain syndrome and transient situational disturbances.

Schizophrenic patients may have an endorphin abnormality characterized by an oversecretion of these peptides [8,18]. This may be the reason why this group of psychiatric patients is underrepresented in the chronic pain population. However, we believe that the more likely reasons relate to the nature of schizophrenia itself and to program selection criteria. Schizophrenia is a socially/vocationally disabling disease. Being less apt to be in the workforce, schizophrenic patients would be less likely to get work-related injuries and, therefore, less likely to be candidate for a pain program. Additionally, because these patients become vocationally disabled early in their lives secondary to mental illness, they are less likely to fulfill financial criteria for pain program entrance. The question of whether schizophrenic patients develop chronic pain needs further investigation.

Personality disorders (axis II)

Reich et al. [22] found that 37% of their patients had at least *one* axis II diagnosis. In our study, 58.4% of our patients had at least one axis II diagnosis. This difference could be attributed to the following: program selection criteria; DSM-III diagnosis site prevalence differences [24]; and secondary to the low reliability of the DSM-III personality disorder diagnostic criteria which lack clear boundaries demarcating the personality disorders from normality and from one another [9].

The most frequently diagnosed personality disorders in the total study sample were the following: dependent (17.4%); passive-aggressive (14.9%); histrionic (11.7%); and compulsive (6.7%). In that patients with personality disorders have a tendency to overreact to stress, including disease, in the characteristic pattern of their personality disorder diagnosis [1], it is useful for pain programs to be able to identify these patients in order to predict their over-response to the illness. In this way, treatment can be better tailored to the patient's personality constellation [11].

Reich et al. [22] did not compare male and female chronic pain patients for the incidence of the individual personality disorders. In our study, males were more likely to be diagnosed as having paranoid ($P < 0.05$) and narcissistic ($P < 0.05$) disorders while females were more likely to be diagnosed as having a histrionic disorder ($P < 0.0001$). The above sex distribution for paranoid and histrionic disorders is the same as that found in the general population [1]. Currently, the sex distribution in the general population for narcissistic personality disorder is unknown while dependent personality disorder is more common in women and compulsive personality disorder is more common in men [1].

However, in our study, both dependent and compulsive personality disorders were equally distributed between males and females. These findings need further investigation as they may be part of the psychodynamic constellation involved in chronic pain behavior.

Personality types

Kahana and Bibring [11] believe that personality type diagnosis can be useful in the clinical management of the patient. Personality type characteristics are accentuated by the medical condition [11] and, therefore, these characteristics

present predictable behavioral management problems. For these reasons, Kahana and Bibring [11] suggest that personality type diagnoses be routinely assigned, in order to assist with the behavioral management of the patient. Table III shows the distribution of personality type diagnosis within our patient group.

The most frequent found personality types were: compulsive (24.5%) and dependent (10.6%). All the personality types were equally distributed between the sexes. Neither the distribution of personality types nor the sex distribution of personality types for the general population are known. Therefore, no comparisons with the general population can be made. However, the authors believe that personality type diagnosis like personality disorders should be further investigated in chronic pain patients as these diagnoses may help to delineate the psycho-dynamic constellation of chronic pain patients.

Conclusion

The following tentative conclusions can be drawn in reference to this group of chronic pain patients: depression is commonly present; psychogenic pain disorder is rare; somatosensory conversion disorder is common; various anxiety syndromes are the most frequent axis I diagnoses; current alcohol and drug abuse/dependence is frequently found; intermittent explosive disorder is also frequent; forms of schizophrenia appear not to be present; and the majority of patients have a personality disorder diagnosis. In light of DSM-III diagnosis site prevalence differences, different pain program patient inclusion criteria and difficulties with DSM-III criteria as with personality disorders, it is difficult to compare these results to the studies of Reich et al. [22] and Katon et al. [12]. The authors agree with Reich et al. [21] on the benefits of the application of the DSM-III system to chronic pain patients. However, the authors have some reservations about the applicability of certain DSM-III diagnoses, e.g., psychogenic pain, to chronic pain populations.

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