Sexual and Physical Abuse History in Subjects With Temporomandibular Disorders: Relationship to Clinical Variables, Pain Sensitivity, and Psychologic Factors

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Recent evidence suggests that a past history of physical and/or sexual abuse is more frequently reported among chronic pain populations; however, the prevalence of reported abuse has not been examined in patients with chronic orofacial pain caused by temporomandibular disorders (TMD). This study compares reported physical/sexual abuse among female TMD subjects recruited from the general population with that of age-matched female control subjects. The association of reported abuse with clinical pain, experimental pain responses, and psychologic variables was examined in the TMD group. Results indicated that a slightly but not statistically greater percentage of TMD subjects (44.8%) reported a history of sexual or physical abuse compared to control subjects (33.3%). Reported abuse among TMD subjects was not related to clinical pain or psychologic variables. Regarding experimental pain responses, TMD subjects reporting a history of abuse exhibited longer ischemic pain tolerances compared to those not reporting abuse; however, the groups did not differ on other experimental pain measures. Results indicate that the reported prevalence of physical/sexual abuse is similar among TMD subjects compared to other chronic pain populations; however, the relationship of abuse to clinical and psychosocial variables remains unclear.
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Recent evidence suggests that there may be an association between chronic pain and a history of sexual or physical abuse. For example, Wurtele et al[1] reported that 28% of a heterogeneous group of primarily musculoskeletal pain patients reported a history of sexual abuse during childhood. Similarly, Toomey et al[2] reported that 28% of a comparable chronic pain population reported a history of either physical or sexual abuse. Goldberg[3] found that 48% of a heterogeneous pain population reported a history of sexual and/or physical abuse. The prevalence of child sexual abuse in the general population is estimated to be at least 20% for females and 5% to 10% for males; however, estimates vary greatly (from 2% to 62%), depending on the method of assessing abuse.[4] Therefore, it is difficult to determine whether these prevalences of abuse in heterogeneous chronic pain populations differ from that of the population at large.

Although the aforementioned studies involved mixed chronic pain groups with no known gender distribution, several investigators have examined the prevalence of reported abuse in specific chronic pain syndromes that are known to be more prevalent among females (eg, fibromyalgia,[5] gastrointestinal pain,[6,7] headache,[8] and pelvic pain.[9]) Domino and Haber[10] reported that 66% of headache patients reported a history of physical or sexual abuse. Drossman et al[11] found that 44% of females referred to a gastroenterology clinic reported a history of sexual or physical abuse, and those reporting an abuse history were at greater risk for pelvic pain as well as nonabdominal symptoms (eg, headache, backache). Relatedly, Scarinci et al[12] found that 56% of their gastrointestinal pain population reported a history of sexual or physical abuse. Toomey et al[13] reported that 53% of pelvic pain patients reported a history of abuse. Recently, two studies have investigated history of abuse in females with fibromyalgia syndrome. One study[14] reported that 53% of fibromyalgia patients reported a history of sexual or physical abuse compared to 42% of nonfibromyalgia rheumatology patients, a nonsignificant difference. Taylor et al[15] found that 65% of their fibromyalgia group compared to 52% of a nonpatient control group reported sexual abuse, also a nonsignificant difference. Thus, it remains unclear whether the prevalence of abuse is higher among chronic pain patients compared to appropriate control populations.

Regardless of whether reported abuse is more common among chronic pain patients than in the general population, the clinical relevance of abuse history and the mechanisms whereby prior abuse may influence the experience of chronic pain are important but unresolved issues. Some studies[12,15,16] have reported increased pain and/or somatic complaints among patients reporting abuse versus nonabused patients. Other investigators[2,13] have reported no differences in clinical pain between the groups. Increased psychologic distress has been commonly observed among patients with a history of abuse.[2,3,12,13,16] One potential mechanism underlying the association between abuse and chronic pain is that patients who have experienced abuse may be more sensitive to aversive stimuli. This possibility seems particularly intriguing because many of these predominantly female pain disorders are characterized by enhanced sensitivity to painful stimuli (eg, fibromyalgia,[17] tension-type headache,[18] and gastrointestinal pain[19,20]). Only one published study has compared pain sensitivity in pain patients reporting prior abuse and those reporting no abuse history. Scarinci et al[12] found that gastrointestinal pain patients who reported a history of sexual or physical abuse showed lower pain-pressure thresholds and a lower criterion for reporting pain compared to nonabused patients.

The purpose of the present study was severalfold: first, the reported prevalence of physical and sexual abuse among females with temporomandibular disorders (TMD) was compared to a similar group of female control subjects. To the knowledge of the authors, there has been no evaluation of abuse history in subjects with TMD, a very common, predominantly female chronic pain syndrome.[21,22] Second, the relationship of reported prior abuse to clinical and psychologic variables among TMD subjects was evaluated. Third, because it has previously been shown that TMD subjects exhibit greater pain sensitivity than do healthy control subjects,[23] the present study was conducted to determine whether laboratory pain sensitivity differs in subjects reporting a history of abuse compared to nonabused subjects.

Materials and Methods

Subjects

The subjects who participated in the present study comprised 58 females suffering from TMD and 39 pain-free females recruited from advertisements placed in local newspapers. A comprehensive dental examination was performed on all TMD subjects by one of the investigators (W.M. or A.S.), as described previously.[23] Briefly, this examination included a detailed medical history and a head and neck examination, which included an assessment of joint function and manual palpation of the masticatory muscles and both temporomandibular joints. An overall measure of muscle and joint sensitivity was obtained by asking each patient to rate the pain evoked by digital palpation as "none" (assigned a value of 0), "mild" (assigned a value of 1), "moderate" (assigned a value of 2), or "severe" (assigned a value of 3). A total palpation pain score was obtained for each patient by summing the palpation scores evoked at each muscle and joint site on both sides of the head. In addition, the number of muscle sites that were associated with pain on palpation was determined. Inclusion criteria for TMD subjects comprised pain in the temporomandibular joint (TMJ) region of at least 6 months duration, sensitivity to palpation of at least three muscle areas, and pain in the TMJ region with a frequency of at least once per week. Subjects were excluded if their pain resulted from

acute trauma or was associated with degenerative joint disease. When possible, TMD subjects were withdrawn from centrally acting agents for a minimum of 2 weeks and from nonsteroidal analgesic agents for at least 2 days prior to experimental testing. Seven of the subjects reported medication usage within 2 days of the experimental session: three from the positive history of abuse (PHA) group and four from the negative history of abuse (NHA) group. Five of these individuals took nonprescription pain medication, two were taking antidepressants (one from each group), and one subject also had taken an antihistamine.

Subjects were classified based on physical findings using the recently developed Research Diagnostic Criteria for Temporomandibular Disorders.[24] Subjects were given a diagnosis of myofascial pain if they *(1)* reported pain originating from the jaw, temples, face, or preauricular area, or inside of the ear during rest or during function; and *(2)* experienced pain that mimicked their clinical pain in response to palpation of three or more of the muscle sites examined. Subjects were given a diagnosis of an arthralgia if they *(1)* experienced pain in the region of the TMJ during maximum unassisted opening, during assisted opening, or during lateral jaw excursions; and *(2)* reported pain, which mimicked at least some aspect of their clinical pain, following the palpation of the lateral poles or posterior attachments of the TM joints. Subjects were given a combined diagnosis of myofascial pain and arthralgia if they fulfilled the criteria established for both diagnoses. All TMD subjects in the present study received a diagnosis of myalgia or combined myalgia and arthralgia. Control subjects were prescreened to ensure that they did not have any health problems or meet criteria for TMD.

Experimental Protocol

This study consisted of an initial screening examination and a single experimental session. During the initial examination, informed consent was obtained, and subjects were screened and familiarized with the equipment and the procedures. The experimental session was typically conducted within 1 week of the screening exam. During this session, subjects completed a battery of psychologic tests, including a questionnaire assessing prior physical and sexual abuse (described below), following which sensitivity to noxious thermal stimuli and to arm ischemia was assessed. Subjects were reimbursed $10.00 per hour for their participation.

At the beginning of the experimental session, subjects were refamiliarized with the testing procedures, and recent history of medication use was assessed. Numerical ratings (0 to 100) of average pain, highest pain, and the percentage of time pain was present during the previous week were determined. Thermal pain threshold and tolerance were then determined, followed by a thermal and visual magnitude estimation procedure. Following thermal pain testing, participants were placed in a supine position. After a 15-minute rest period, they were asked to provide information about their current level of facial pain by selecting a numerically weighted verbal descriptor from each of two lists, one of which matched the intensity and the other of which matched the unpleasantness of their facial pain.[25] Subjects also provided a numerical rating of their facial pain from 0 (no pain) to 100 (the most intense pain imaginable). Following the assessment of facial pain, the submaximal effort tourniquet procedure was conducted on the left arm, and the times to ischemic pain onset and tolerance were determined.

Experimental Procedures

Thermal Threshold and Tolerance. Thermal pain threshold (TPTh) and thermal pain tolerance (TPTo) were determined on the left volar forearm by an ascending method of limits using a 1-cm-diameter contact thermode with a rise time of 10°C/second. The thermode was controlled by a 486 DOS-based PC. An adapting temperature of 38°C was maintained for 10 seconds. The temperature then increased to 41.5°C and increased 0.5°C every 5 seconds, until it reached 50°C or until the patient reported TPTo, whichever came first. To determine thermal pain threshold, subjects were instructed to say "painful" when the thermal percept first became painful. To determine tolerance, subjects were instructed to say "stop" when they no longer felt able to tolerate the pain. The temperature of the thermal probe head at the time subjects reported threshold and tolerance was recorded. This procedure was conducted four times, and the mean value of the last three trials was calculated to determine thermal pain threshold and tolerance.

Magnitude Estimation of Thermal and Visual Stimuli. During this psychophysical procedure, a series of alternating thermal and visual stimuli of varying intensities was administered, and subjects were asked to rate the intensity of both types of stimuli on the same numerical scale. Having subjects rate both visual and thermal stimuli allows

determination of whether differences are specific to painful stimuli. Visual and thermal stimuli were computer-controlled using a 486 DOS-based PC, on which data were also stored. Thermal stimuli were administered to multiple premarked spots along the left volar forearm such that the thermal probe was not immediately reapplied to the same spot during the procedure. Visual stimuli consisted of varying intensities of light presented through a 3-cm-diameter opaque white panel illuminated from the rear with a tungsten lamp. The adapting intensity for the visual stimulus was 30 voltage units, and there were five subsequent trial stimuli at the following intensities: 60; 100; 150; 200; and 255 voltage units. The adapting temperature for the thermal stimulus was 38°C, and there were five trial stimuli: 45°C; 46°C; 47°C; 48°C; and 49°C. Each visual and thermal trial included a 5-second stimulus at the adapting intensity, followed by a 5-second trial stimulus. Thermal and visual stimuli were presented on alternate trials, and the intensities of the stimuli were randomly presented. The series consisted of 20 visual and 20 thermal trials (4 trials at each stimulus intensity). Subjects were instructed to rate the intensity of the visual and thermal stimuli using the same 0-to-100 scale. The anchors of the scales were: "no change in brightness" and "the most intense change in brightness you can imagine" for visual stimuli, and "no pain" and "the most intense pain you can imagine" for thermal stimuli. Subjects underwent several practice trials to become familiar with the procedures. The arithmetic means of all visual and all thermal ratings were calculated to provide one overall thermal rating and one overall visual rating.

Submaximal Effort Tourniquet Procedure. Subjects underwent the submaximal effort tourniquet test as described previously.[26,27] This procedure induces ischemic pain by occluding the left arm with a standard blood pressure cuff and having subjects perform 20 hand grip exercises at 30% of their maximum grip strength. Subjects were asked to indicate the onset of ischemic pain (ischemic pain threshold, IPTh) and the point at which they could no longer tolerate pain (ischemic pain tolerance, IPTo). The procedure was terminated at the point of tolerance or after 25 minutes, whichever came first. At IPTo, subjects were asked to rate their arm pain using standardized weighted verbal descriptors[25] and a numerical rating scale. Following the ischemic task, subjects were thanked for their participation and were dismissed. All subjects provided written informed consent prior to participation, and all procedures were approved by the University of North Carolina's Committee on the Rights of Human Subjects.

Self-Report Measures

Verbal Descriptors of Pain. Subjects matched their orofacial pain and arm pain at the time of ischemic pain tolerance to verbal descriptors of pain intensity and pain unpleasantness. Each group of descriptors was composed of 13 separate words, and each descriptor was assigned a numerical weight that was previously determined by a cross-modality matching procedure.[25] A verbal numerical scale was also used to measure pain. The distinction between the intensity and unpleasantness of pain was explained to the participants by reading the following[28]:

> *There are two primary aspects of pain which we are interested in measuring: the intensity, how strong the pain feels; and the unpleasantness, how unpleasant or disturbing the pain is for you. The distinction between these two aspects of pain might be made clearer if you think of listening to music on a radio. As the volume of the music increases, I can ask you how loud it sounds or how unpleasant it is to hear. The intensity of pain is like loudness. The pleasantness or unpleasantness of the music depends on how much you like or dislike the music. The unpleasantness of pain depends on how much you dislike the feeling.*

Sexual/Physical Abuse History Questionnaire. The Sexual/Physical Abuse History Questionnaire contains items developed for population-based survey research on sexual and physical abuse.[11] It has been found to have adequate reliability and validity, and it shows high agreement with abuse data obtained from clinical interviews.[29] This questionnaire has been used in several studies[2,11,13] of abuse in chronic pain populations. The following items of the questionnaire were presented:

1. A. Has anyone ever exposed the sex organs of their body to you when you didn't want it?
   B. Has anyone ever threatened to have sex with you when you didn't want this?
   C. Has anyone ever touched the sex organs of your body when you didn't want this?
   D. Has anyone ever made you touch the sex organs of their body when you didn't want this?

E. Has anyone ever forced you to have sex when you didn't want this?
F. Have you ever had any other unwanted sexual experiences not mentioned above?

2. When you were a child, did an older person do the following (1 = never, 2 = seldom, 3 = occasionally, 4 = often):
   A. Insult or humiliate you, or try to make you feel guilty?
   B. Hit, kick, or beat you?
3. Now that you are an adult, has any other adult done the following (1 = never, 2 = seldom, 3 = occasionally, 4 = often):
   A. Insult or humiliate you, or try to make you feel guilty?
   B. Hit, kick, or beat you?

Subjects answered each item based on whether it occurred during childhood and/or adulthood. Consistent with previous criteria,[2,11,13] a subject was considered to have a history of sexual abuse if she provided a positive response to any of questions A through E of item 1 during childhood or questions B through E during adulthood. A subject was considered to have a history of physical abuse if she responded that she was often kicked or beaten during childhood or adulthood (items 2 and 3).

Multidimensional Pain Inventory. The Multidimensional Pain Inventory (MPI) is a 61-item questionnaire that assesses adjustment to pain from a cognitive-behavioral perspective. It yields five symptom subscales: pain severity; pain interference; affective distress; life control; and social support. It also provides subscale scores based on how significant others respond to the patient. There is also an index of activity level. The pattern of subscale scores can be statistically classified into one of three profile types: dysfunctional; interpersonally distressed; and adaptive coper. This instrument is widely used in multiple pain populations, including TMD, and has been extensively researched and validated. Specific norms are available from a group of patients with chronic orofacial pain.[30,31]

Symptom Checklist 90-Revised. The Symptom Checklist 90-Revised (SCL-90-R) is a multidimensional, self-report symptom inventory comprising 90 items, each rated on a five-point scale of distress (0 to 4) from "not at all" to "extremely." It is scored on nine primary symptom dimensions plus three global indexes of pathology. The subscales examined in the present study include: somatization; depression; anxiety; hostility; and the Global Severity Index (GSI). The GSI combines information on numbers of symptoms and intensity of distress, and it is the best overall indicator of psychologic distress. The SCL-90-R has shown good reliability and has a substantive normative database.[32] It has been widely used with TMD populations,[33] and it is a recommended instrument for assessing the psychosocial axis within the Research Diagnostic Criteria for Temporomandibular Disorders.[24]

State-Trait Anxiety Inventory. The State-Trait Anxiety Inventory (STAI)[34] consists of two 20-item questionnaires, one of which assesses situational (ie, state) anxiety, and the other assesses more generalized (ie, trait) anxiety. This is a well-validated and widely used anxiety assessment instrument.

Coping Strategies Questionnaire. The Coping Strategies Questionnaire (CSQ)[35] consists of 44 items relating to how individuals cope with pain. It yields seven subscales based on the pain coping strategies that individuals report using: diverting attention; catastrophizing; praying and hoping; ignoring pain sensations; reinterpreting pain sensations; increasing behavioral activity; and self-coping statements. The CSQ also provides measures of subjects' perceived ability to control and decrease pain. It has been widely used with various pain populations,[36,37] and CSQ scores have been shown to differ for pain-tolerant versus pain-sensitive individuals.[38]

Profile of Mood States. The Profile of Mood States–Bipolar Form (POMS)[39] consists of 72 mood-related items. Subjects indicate the extent to which each item describes their current mood. This questionnaire assesses both positive and negative affective dimensions, and it provides six mood subscales: composed-anxious; agreeable-hostile; elated-depressed; confident-unsure; energetic-tired; clearheaded-confused. The POMS has been well validated with other mood measures, and it is sensitive to subtle differences in affective state.[39]

Data Reduction and Analysis

Descriptive statistics are reported as means ± standard errors of the mean (SEM). The statistical significance of between-group differences of the various dependent variables was determined by multivariate analysis of variance (MANOVA), when multiple dependent measures were conceptually related (eg, multiple scales of a questionnaire), and univariate ANOVA were used to determine differences on individual dependent measures. Significance was set at $\alpha = .05$.

Results

Prevalence of Abuse

The prevalence of reported sexual abuse in the TMD group was 44.8% (26 of 58) compared to 33.3% (13 of 39) in the control group. This difference was not statistically significant ($\chi^2[1] = 1.282$; $P = .26$). Of those reporting a history of sexual abuse, 26.9% (7 of 26) of TMD subjects and none of the control subjects also reported a history of physical abuse. None of the participants reported physical abuse alone. Among the TMD subjects, the PHA group (mean 29.5 years, range 20 to 56) was marginally older than the NHA group (mean 25.5 years, range 18 to 49), ($f[1,56] = 3.28$, $P = .08$), but the two groups were of similar age among control subjects (abused group, mean 24.5 years, range 18 to 39; and nonabused group, mean 26.0 years, range 19 to 36).

Clinical Signs and Symptoms

Diagnostic and clinical pain data for PHA and NHA TMD subjects are presented in Tables 1 and 2. No statistically significant group differences occurred for any of the diagnostic variables or clinical pain measures (all $P > .15$).

Thermal and Ischemic Pain Responses

Data from the thermal, visual, and ischemic procedures for PHA and NHA groups are presented in Table 3. None of the thermal measures or the ratings of visual stimuli differed across groups ($P > .5$).

Also, the groups did not differ in IPTh ($P > .5$); however, the PHA group exhibited a significantly longer IPTo ($f[1,56] = 4.02$, $P < .05$). Verbal descriptors and numerical ratings of ischemic pain at the time of tolerance did not differ for the two groups ($P > .25$).

Psychologic Measures

Separate MANOVA revealed no group differences on symptom scales from the Symptom Checklist 90-Revised, the Profile of Mood States, or the Multidimensional Pain Inventory ($P > .15$). A MANOVA on scales from the Coping Strategies Questionnaire revealed a marginal group effect ($\lambda[7,50] = 2.18$, $P = .052$). Follow-up ANOVA revealed that the PHA group reported marginally greater use of reinterpreting pain sensations ($f[1,56] = 3.51$, $P = .07$) and significantly greater use of increasing behav-

Table 1 Demographic and Diagnostic Data for TMD Subjects Reporting PHA and NHA

	PHA (n = 26)	NHA (n = 32)
Duration of pain (months)	63.50 (9.78)	71.65 (11.39)
Diagnosis: myalgia (%)	18.75	19.23
Diagnosis: combined (%)	81.25	80.77
Unassisted opening (mm)	35.62 (1.69)	39.19 (1.83)
Assisted opening (mm)	45.96 (1.29)	48.48 (1.47)
Palpation score	37.85 (3.96)	36.38 (3.99)
Painful muscle sites	9.42 (0.56)	9.19 (0.59)

Data are presented as means (standard errors) except diagnoses, which are reported as percentages.

Table 2 Clinical Pain Reports for TMD Subjects Reporting PHA and NHA

	PHA (n = 26)	NHA (n = 32)
Current pain unpleasantness (kg)	2.85 (0.58)	2.93 (0.52)
Current pain intensity (kg)	3.84 (1.01)	6.44 (1.59)
Current overall pain (0–100)	16.92 (3.87)	23.72 (4.19)
Average pain previous week (0—100)	25.40 (4.32)	28.58 (4.02)
Highest pain previous week (0–100)	46.52 (5.54)	50.03 (4.77)
Time in pain previous week (%)	45.78 (6.14)	41.65 (5.47)

Data are presented as means (standard errors).

Table 3 Responses to Thermal, Visual, and Ischemic Stimuli for TMD Subjects Reporting PHA and NHA

	PHA (n = 26)	NHA (n = 32)
Thermal pain threshold (°C)	43.18 (0.41)	43.52 (0.33)
Thermal pain tolerance (°C)	45.78 (0.40)	45.61 (0.34)
Rating of thermal stimuli (0–100)	63.23 (3.73)	66.05 (3.78)
Rating of visual stimuli (0–100)	28.91 (2.45)	32.17 (2.27)
Ischemic pain threshold (seconds)	118.15 (15.30)	103.34 (25.89)
Ischemic pain tolerance (seconds)	447.50 (83.68)	254.28 (54.10)*
Pain unpleasantness (kg)	19.21 (2.51)	17.09 (2.10)
Pain intensity (kg)	37.85 (2.66)	35.20 (2.66)
Overall pain (0–100)	77.69 (3.08)	72.22 (3.53)

Data are presented as means (standard errors).
*$P < .05$.

ioral activity (f[1,56] = 7.07, $P < .05$) as methods of coping with pain. Although the two groups did not differ in state anxiety ($P > .5$), PHA subjects reported marginally higher trait anxiety (f[1,56] = 3.76, $P = .058$ [PHA trait anxiety = 39.00 (2.45), NHA trait anxiety = 33.22 (1.81)]). Additionally, subjects in the PHA group rated the experimental procedures as significantly more stressful than did the NHA group (f[1,56] = 4.09, $P < .05$ [PHA stress rating = 40.04 (5.01), NHA stress rating = 26.39 (3.88)]).

Discussion

The findings of the present study suggest that the prevalence of reported history of sexual abuse is not significantly higher among TMD subjects compared to pain-free control subjects. With regard to physical abuse, 26.9% (7 of 26) of the TMD subjects who reported sexual abuse also reported a history of physical abuse, compared to none of the control subjects. Among TMD subjects, history of abuse was unrelated to clinical pain or diagnostic data, and PHA versus NHA groups did not differ in their responses to painful thermal and nonpainful visual stimuli. However, the PHA group exhibited significantly longer ischemic tolerance times compared to the NHA group. In addition, PHA subjects reported marginally higher trait anxiety, provided greater postexperiment stress ratings, and reported more frequent use of reinterpreting pain and increasing activity as pain coping strategies. No statistically significant group differences were noted for the other psychologic instruments (ie, the MPI, SCL-90-R, and the POMS).

To our knowledge, this is the first study examining the prevalence of reported sexual/physical abuse among TMD subjects. The prevalence of reported abuse among these TMD subjects (44.8%) is consistent with previously published data from other pain populations, with reported prevalences ranging from 28%[1,2] to 66%.[10] This is particularly interesting given that previous samples were recruited from treatment-seeking (ie, clinic-based) populations; our subjects were recruited from the general population, and the majority were not in treatment at the time of testing. Given that abuse history has been associated with increased health care utilization, it seems plausible that abuse would be more prevalent among treatment-seeking patients; however, these data suggest a comparably high prevalence of abuse in a non-clinic-based population.

The lack of association between clinical pain report and abuse history found in the present study is similar to some previous findings,[2,12,13] but different from others that reported greater pain among patients reporting prior abuse.[10,15] Regarding experimental pain responses, our finding of greater ischemic pain tolerance in the PHA group is at odds with a previous report of decreased mechanical pain threshold among abused gastrointestinal pain patients.[12] This discrepancy may be a result of several methodologic differences between the two studies. First, in the earlier study,[12] the patient populations were quite different, and the patients were clinic based. Second, the pain stimuli were different (mechanical versus ischemic). Also, the investigators reported differences for pain threshold and response criteria, while we found differences only for ischemic pain tolerance. It seems likely that these measures reflect different dimensions of the pain experience. For example, threshold is often considered a more "sensory" measure, while tolerance is believed to have strong affective-motivational contribution. Thus, the PHA and NHA groups may not differ in their sensory discrimination of noxious stimuli, which is consistent with the results of Scarinci et al,[12] who reported no difference on a measure of discriminability; however, our results suggest a greater willingness to tolerate an aversive stimulus in the PHA group. Given the large number of statistical tests conducted in the present study, and the fact that no differences emerged for other experimental pain responses, it is also possible that this significant finding is the result of chance or experimental artifact, and it must be considered tentative. For example, it is possible that completing a questionnaire concerning past abuse differentially influenced the responses to experimental stimuli in the PHA versus NHA groups; therefore, in future studies it may be preferable to assess pain sensitivity before administering the abuse questionnaire. Further investigation into the relationship between abuse history and experimental pain responses is warranted.

In contrast to the inconsistent association between abuse history and clinical and experimental pain, previously published studies unanimously indicate significantly greater psychologic distress among prior abuse patients. For example, Domino and Haber[10] reported higher scores on several scales of the Minnesota Multiphasic Personality Inventory among abuse victims, indicating poorer personality adjustment. Toomey et al[2] and Toomey et al[13] found that abused patients were characterized by lower perceived control and greater psychologic distress on the SCL-90-R.

Similarly, Scarinci et al[12] reported greater psychologic and somatic symptomatology among abused gastrointestinal pain patients. These authors also reported increased use of maladaptive coping strategies among the abused group. Relatedly, history of reported abuse has been associated with increased depression in a heterogeneous chronic pain sample[3] and among fibromyalgia patients.[15] Our data suggest minimal differences in psychologic distress between abused and nonabused groups, and, in fact, the PHA group reported somewhat more frequent use of certain adaptive pain coping strategies. The most likely explanation for this discrepancy is that our patient population as a whole exhibited minimal psychologic distress compared to other pain populations, probably because they were recruited from the general population. For example, on the Global Severity Index (a measure of overall distress) of the SCL-90-R, our subjects' mean scores were 0.66 and 0.57 (for T scores of approximately 60 and 61) for PHA and NHA groups, respectively. Toomey et al[2] reported mean scores of 1.52 and 0.85 for their abused and nonabused patients, respectively. Relatedly, both groups in our study scored very close to the normative means on all POMS subscales.[39]

The mechanisms underlying the putative relationship between abuse history and chronic pain remain relatively unexplored. Although it is possible that chronic pain patients, especially those who are psychologically distressed, are simply more willing to report prior abuse compared to control subjects, we are aware of no evidence supporting this possibility. A more likely mechanism involving psychosocial factors is that the adverse psychologic consequences of abuse or other trauma (eg, mood disturbance, inadequate coping skills, self-blame) may predispose individuals to develop chronic medical conditions, including chronic pain. Consistent with this notion are data suggesting a higher prevalence of psychiatric disturbance and greater health care utilization among abuse victims.[2,40,41] In addition, the greater psychologic distress of chronic pain patients reporting a history of abuse is consistent with this possibility. However, it is difficult to reconcile that in some studies,[2,12,13] psychologic distress was elevated in abused patients, but they did not report enhanced clinical pain; in our study, the abused group did not exhibit greater psychologic symptomatology on most measures. Another potential mechanism relating abuse history to chronic pain is that victims of abuse may develop enhanced sensitivity to noxious stimuli. This could occur through remodeling of central nervous system pathways involved in processing nociceptive stimuli, for example, through sensitization of nociceptive pathways or via an impairment in pain regulatory systems (eg, opioid systems). Additionally, enhanced pain sensitivity could result from cognitive mechanisms such as hypervigilance, which is characterized by increased attention to or amplification of aversive perceptual stimuli.[42] It has recently been demonstrated that fibromyalgia patients score higher on measures of hypervigilance and show greater sensitivity to pain and nonpainful sensory stimuli.[43] Assessment of hypervigilance in future studies investigating the association between chronic pain and abuse history would be helpful. Although one previous study[12] indicated lower pain threshold and lower response criteria in patients with a history of abuse, our data suggest that prior abuse is associated with diminished ischemic pain sensitivity. Thus, the relationship between pain sensitivity and abuse history remains uncertain.

Summary

The prevalence of reported abuse among this general population–based group of TMD subjects is similar to that of previous studies examining prior abuse in clinic-based chronic pain populations. Abuse history was not related to clinical pain, but subjects with a history of abuse exhibited longer ischemic tolerance times compared to the group without a history of abuse. In contrast to previous studies, in the present study, little relationship between abuse history and psychologic distress was observed, probably because the patient sample in the present study as a whole exhibited minimal psychologic symptomatology. In the present study, like all retrospective studies, it is impossible to determine the accuracy of subjects' reports of prior abuse. Despite the recent proliferation of research investigating the association between abuse history and chronic pain, the relationship between abuse history and clinical variables remains ambiguous. Additional research to elucidate the clinical relevance and mechanisms underlying the relationship between abuse and chronic pain is encouraged, and future studies should examine both clinic-based and general population–based patient groups.

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Resumen

Antecedentes de Abuso Físico y Sexual en Personas con Desórdenes Temporomandibulares: Relación a las Variables Clínicas, Sensibilidad al Dolor y Factores Psicológicos

Existe nueva evidencia que indica que los antecedentes de abuso físico y/o sexual son reportados mas frecuentemente entre las personas que sufren de dolor crónico; sin embargo, la prevalencia del abuso reportado no ha sido examinada en pacientes que padecen de dolor orofacial crónico causado por los desórdenes temporomandibulares (DTM). Este trabajo estudia el abuso físico/sexual reportado entre una población femenina con DTM, extraída de la población general; y lo compara con una población femenina de control compuesta de personas cuya edad concordaba con la del grupo experimental. En el grupo que sufría de DTM se examinó la asociación del abuso con el dolor clínico, las respuestas al dolor experimental, y las variables psicológicas. Según los resultados, en el grupo experimental se determinó un porcentaje ligeramente mayor (44,8%) de casos con antecedentes de abuso sexual o físico; sin embargo, este porcentaje no fue estadísticamente mayor en comparación con el grupo de control (33,3%). El abuso reportado entre las personas con DTM no fue relacionado al dolor clínico o a las variables psicológicas. En cuanto a las respuestas al dolor experimental, las personas con DTM que reportaron antecedentes de abuso presentaron una mayor tolerancia al dolor isquémico en comparación a aquellas que no reportaron abuso; sin embargo, los grupos no se diferenciaron en cuanto a otras medidas del dolor experimental. Los resultados indican que la prevalencia del abuso físico/sexual reportada es similar entre las personas con DTM en comparación con otras poblaciones con dolor crónico; sin embargo, la relación del abuso a las variables psicológicas y clínicas todavía no es clara.

Zusammenfassung

Sexuelle und körperliche Missbrauchsvorgeschichte bei Personen mit temporomandibulären Erkrankungen: Beziehung zu klinischen Variablen, Schmerzempfindlichkeit und psychologischen Faktoren

Jüngste Befunde lassen vermuten, dass häufiger über eine Vorgeschichte von körperlichem oder sexuellem Missbrauch berichtet wurde bei chronischen Schmerzpopulationen; jedoch wurde die Verbreitung der berichteten Missbräuche nicht untersucht bei Patienten mit chronischem orofazialem Schmerz hervorgerufen durch temporomandibuläre Erkrankungen (TMD). Diese Studie vergleicht berichteten körperlichen/sexuellen Missbrauch bei weiblichen TMD-Patienten, welche aus der Allgemeinbevölkerung rekrutiert wurden, mit altersentsprechenden weiblichen Kontrollpersonen. Die Verbindung des berichteten Missbrauchs zu klinischen Schmerzen, experimentellen Schmerzantworten und psychologischen Variablen wurde in der TMD-Gruppe untersucht. Die Resultate weisen darauf hin, dass ein leicht aber nicht statistisch grösserer Prozentsatz der TMD-Personen (44,8%) über eine Vorgeschichte von sexuellem oder körperlichem Missbrauch berichtete, verglichen mit den Kontrollpersonen (33,3%). Berichteter Missbrauch bei TMD-Personen war nicht verbunden mit klinischen Schmerzen oder psychologischen Variablen. Betrachtet man die experimentellen Schmerzantworten, so zeigen TMD-Personen mit Missbrauchsvorgeschichte längere ischämische Schmerztoleranzen verglichen mit denjenigen ohne berichteten Missbrauch; dagegen unterscheiden sich die Gruppen nicht bei den anderen experimentellen Schmerzmessungen. Die Resultate deuten an, dass die berichtete Verbreitung von körperlichem/sexuellem Missbrauch ähnlich ist bei TMD-Personen wie bei anderen chronischen Schmerzpopulationen; jedoch bleibt die Beziehung zwischen Missbrauch und klinischen sowie psychosozialen Variablen unklar.