Childhood Trauma and Pain and Pain Catastrophizing in Adulthood: A Cross-Sectional Survey Study

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ABSTRACT

Objective: Previous studies have indicated relationships between trauma in childhood and pain in adulthood, although some studies have reported no such relationships and challenge the methodologies of large-scale community samples. In this study involving a clinical sample, we examined relationships among (1) childhood trauma at ages 12 or younger, (2) rated pain for 3 time points in adulthood, and (3) pain catastrophizing (ie, catastrophic thoughts and feelings about pain).

Method: Using a cross-sectional approach and a self-report survey methodology in a consecutive sample of adult internal medicine outpatients (n = 243), we examined relationships among 5 types of childhood trauma (witnessing violence, physical neglect, emotional abuse, physical abuse, and sexual abuse); ratings of pain now, over the past month, and over the past year; and scores on the Pain Catastrophizing Scale (PCS) and its subscales (rumination, magnification, and helplessness). Data were collected in November 2012.

Results: In univariate analyses, nearly all types of childhood trauma statistically significantly ($P < .01$) correlated with all self-ratings of pain, as well as the total PCS score and scores on the subscales of the PCS, with a few exceptions involving physical neglect, which demonstrated a weaker relationship. In multivariate analyses, emotional abuse (standardized $\beta = 0.17$, $t = 2.37$, $P < .05$) and sexual abuse (standardized $\beta = 0.16$, $t = 2.26$, $P < .05$) were uniquely predictive of the summed ratings of pain for each participant, and emotional abuse uniquely predicted catastrophic thoughts and feelings about pain (standardized $\beta = 0.32$, $t = 4.58$, $P < .001$).

Conclusions: In this clinical sample of adult outpatients, there were clear relationships between childhood trauma and all forms of pain assessment and pain catastrophizing. We discuss possible explanations and implications of these findings.

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An association between maltreatment and abuse in childhood and pain in adulthood was proposed by Engel[1] over 50 years ago. Despite this long-standing association, the empirical literature has continued to exhibit some controversy. For example, in an overview of the literature, Arnow[2] concluded that childhood sexual abuse demonstrates repeated associations with chronic pain. In addition, using a meta-analytic approach, Davis et al[3] found that (1) individuals who reported abuse or neglect in childhood reported more pain symptoms than individuals without such histories and (2) patients with chronic pain were more likely to report histories of abuse or neglect in childhood compared to healthy controls. However, Raphael et al[4] proposed that the relationship between abuse in childhood and pain in adulthood is murky. They stated that, while significant effects tend to emerge in large cross-sectional studies in which participants self-report abuse, available prospective studies do not seem to consistently confirm this relationship.[4] Because of this, Raphael and colleagues[4] concluded that the existing evidence does not support a relationship between abuse in childhood and pain in adulthood.

As for a sampling of available studies, several over the past 15 years consisted of community samples. For example, Gonzalez et al[5] prospectively examined 1,475 Canadian community dwellers for physical and sexual abuse and chronic pain conditions. At 18-year follow-up, both forms of abuse were statistically related to chronic pain.[5] Using data from the National Comorbidity Survey, Sachs-Ericsson et al[6] examined 1,727 individuals for sexual and physical abuse in childhood and found that childhood abuse was associated with more reported pain. Brown et al[7]examined 649 young adults and confirmed a relationship between a self-reported history of sexual abuse in childhood and chronic pain in adulthood. Finally, in a Canadian study, Walsh et al[8] examined 3,381 participants and reported that physical abuse in childhood, but not sexual abuse, was associated with chronic pain.

In addition to studies of community samples, researchers have also examined college student populations. For example, Fillingim and Edwards[9] examined 110 college students for histories of physical and sexual abuse and reported that a history of either was associated with increased pain complaints. Fillingim et al[10] examined 426 college students for histories of childhood physical and sexual abuse and found that the abused subsample reported experiencing more pain sites, as well as a greater severity of pain over the past month.

Researchers have also studied clinical populations. For example, Arnow et al[11] examined 206 psychologically distressed female primary care patients with histories of childhood physical or sexual abuse; the combination of both forms of childhood abuse was statistically associated with more frequent pain as well as acute pain. Likewise, in 83 female patients with pain, Lampe et al[12] examined histories of childhood physical and sexual abuse. In this study,[12] researchers found associations between physical abuse in childhood and chronic pain and sexual abuse in childhood and chronic pelvic pain. Goldberg and Goldstein[13] examined 92 patients with chronic pain who were recruited from a general hospital and a rehabilitation hospital. The researchers found that sexual and verbal abuse, but not physical abuse,

Clinical Points

- Childhood physical and sexual abuse has been related to pain intensity in adulthood; however, other forms of maltreatment (witnessing of violence, physical neglect, and emotional abuse) have been rarely examined, and relationships between childhood abuse and pain catastrophizing have not been explored.
- In multivariate analyses, childhood emotional and sexual abuse demonstrated unique relationships with summed pain ratings in adulthood, and emotional abuse demonstrated a unique relationship with pain catastrophizing.
- Emotional abuse stands out as a unique predictor of both pain as well as the catastrophizing of pain—a potential point of intervention in children and adolescents.

was associated with chronic pain.[13] Finally, in a sample of 63 female patients with chronic pelvic pain, Randolph and Reddy[14] found that the extent of sexual abuse in childhood was associated with greater severity of and interference from pain in adulthood.

While all of the preceding studies suggest relationships between some form of abuse in childhood and chronic pain in adulthood, not all studies have come to these conclusions. For example, McBeth et al[15] examined 296 community dwellers from the United Kingdom demonstrating psychological distress and reported that, whereas pain ratings were elevated, abuse in childhood was not statistically significantly associated with chronic widespread pain in adulthood.

What can we conclude from this sampling of studies over the past 15 years? First, the forms of abuse in childhood that have been most studied are physical and/or sexual abuse. However, other forms of abuse may be important predictors of pain and pain catastrophizing as well. Therefore, a thorough assessment of all forms of abuse and neglect is necessary to fully understand the relationships between childhood maltreatment and pain and pain catastrophizing in adulthood. Second, the majority of studies in community, college, and clinical samples have demonstrated relationships between abuse in childhood and chronic pain of some type in adulthood. Third, not all studies confirm this association.

In this study of adult internal medicine outpatients, we examined relationships between self-reported abuse in childhood and pain in adulthood. We examined 5 forms of abuse in childhood (witnessing violence, physical neglect, emotional abuse, physical abuse, sexual abuse) and pain assessments at 3 time points in adulthood (pain today, pain over the past month, pain over the past year). We also examined relationships between abuse in childhood and pain catastrophizing (catastrophic thoughts and feelings with regard to pain), which, to date, is an unexplored area.

METHOD

Participants

Potential participants in this study were men and women, aged ≥ 18 years, who were being seen at an internal medicine outpatient clinic for nonemergent medical care. This clinic is staffed by both residents and faculty in the department of internal medicine and is located in a midsized, midwestern US city. The majority of patients recruited for this study were seen by resident providers. We excluded individuals with compromising medical (eg, debilitating pain), intellectual (eg, mental retardation), cognitive (eg, dementia), or psychiatric symptoms (eg, psychotic) of a severity to preclude the candidate's ability to successfully complete a survey (n = 13). This exclusion process was informal and undertaken by the recruiter as patients registered for clinical service. Data were collected in November of 2012.

At the outset, 349 individuals were approached and 244 agreed to participate, for a participation rate of 70%. As for the 105 individuals who did not participate, 68 refused outright, 13 appeared too distressed, 21 appeared too burdened (eg, struggling with children), and 21 reported not wanting to commit the time. Of the 244 individuals who agreed to participate, 243 completed the items pertaining to childhood trauma and pain. Of these 243 respondents included in our analyses, 63.0% were women and 37.0% were men, ranging in age from 21 to 80 years (mean = 45.89, SD = 15.12). Most participants were white (76.1%); however, 20.6% of participants were black, 0.8% were Asian, 1.6% were Hispanic, and 0.8% were "other." With regard to educational attainment, all but 2.5% had at least graduated from high school, whereas 23.8% had earned at least a bachelor's degree.

Procedure

During clinic hours, one of the authors (D.A.W.) positioned himself in the lobby of the internal medicine outpatient clinic, approached incoming patients following registration, and informally assessed exclusion criteria. This informal method was elected because surveys needed to be completed before appointments with primary care providers. With potential candidates, the recruiter reviewed the focus of the project (ie, a study examining childhood stressors and pain) and then invited each to participate. Each participant was asked to complete a 6-page survey, which took about 10 minutes. Surveys were completed onsite in the lobby. Participants were asked to place completed surveys into sealed envelopes and then into a collection box in the lobby of the clinic.

The survey consisted of 4 core sections. The first section was a demographic query in which we asked participants about their sex, age, marital status, racial/ethnic origin, and educational level.

Using an author-developed assessment, the second section of the survey explored pain intensity at 3 specific time points: today, over the past month, and over the past year. We employed this simple and face-valid assessment tool because many pain assessments entail similar analog scales yet require a fee for use. For each time point, respondents were presented with the numbers 0–10 positioned on a single line. Labels beneath the numbers were "no pain" under the number 0, "mild" under the numbers 1–3, "moderate" under the numbers 4–6, and "severe" under the numbers 7–10. Respondents were asked to circle the single number that best corresponded to their level of pain during that time period.

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The third section of the survey assessed childhood histories of 5 types of abuse. An author-developed questionnaire was used to assess these 5 types of childhood trauma. Participants were asked, "Prior to the age of 12, did you ever experience … ," with yes/no response options. Individual items were (1) the witnessing of violence (ie, "the first-hand observation of violence that did not directly involve you"), (2) physical neglect (ie, "not having your basic life needs met"), (3) emotional abuse (ie, "verbal and nonverbal behaviors by another individual that were purposefully intended to hurt and control you, not kid or tease you"), (4) physical abuse (ie, "any physical insult against you that would be considered inappropriate by either yourself or others and that left visible signs of damage on your body either temporarily or permanently or caused pain that persisted beyond the 'punishment'"), and (5) sexual abuse (ie, any sexual activity against your will). We elected this succinct assessment because of our previous experience with this measure, which accommodates well to the demands of a busy medical clinic. The cutoff age of 12 years was chosen to be reasonably sure that the majority of participants were emotionally functioning as children during the time of the abuse. As an author-created assessment, there are no established validity or reliability data.

The fourth section of the survey assessed the catastrophizing of pain using the Pain Catastrophizing Scale (PCS).[16] The PCS is a 13-item self-report measure of catastrophic thoughts and feelings about pain. This measure has a 5-point Likert-style response scale (0 = not at all to 4 = all the time), and the scoring range is 0–52, with higher scores indicating higher levels of catastrophic thoughts and feelings. The PCS has 3 underlying factors or dimensions of pain catastrophizing: rumination (items 8, 9, 10, and 11), magnification (items 6, 7, and 13), and helplessness (items 1, 2, 3, 4, 5, and 12). With regard to validity, the PCS has been validated in both clinical and nonclinical populations.[16–18] In the current study, Cronbach's α was 0.98 for the 13-item measure, 0.97 for the rumination subscale, 0.88 for the magnification subscale, and 0.96 for the helplessness subscale.

This project was reviewed and exempted by the institutional review boards of the sponsoring hospital and the local university because it presented no more than minimal risk and involved no procedures for which written consent is normally required outside of the research context. Completion of the survey was assumed to be implied consent, which was explained to participants on the cover page of the survey.

RESULTS

Of the 243 respondents, 67 (27.6%) indicated having personally witnessed violence during childhood, 17 (7.0%) indicated physical neglect, 78 (32.1%) indicated emotional abuse, 46 (18.9%) indicated physical abuse, and 37 (15.2%) indicated sexual abuse. Point-biserial correlations between each form of childhood trauma and scores on each measure of pain are presented in Table 1. With a few exceptions involving physical neglect, each form of childhood trauma demonstrated statistically significant correlations with each measure of pain ($P < .01$).

Table 1. Point-Biserial Correlations Between Childhood Trauma and Measures of Pain in a Sample of Adult Internal Medicine Outpatients (N = 243)

Measure	Witness Violence	Physical Neglect	Emotional Abuse	Physical Abuse	Sexual Abuse
Rating of pain now	0.20*	0.15	0.29*	0.26*	0.27*
Pain over past month	0.22*	0.21*	0.28*	0.26*	0.28*
Pain over past year	0.25*	0.21*	0.31*	0.24*	0.30*
Pain Catastrophizing Scale					
Total score	0.21*	0.17*	0.41*	0.29*	0.27*
Pain rumination	0.23*	0.19*	0.41*	0.30*	0.26*
Pain magnification	0.20*	0.15	0.42*	0.27*	0.28*
Pain helplessness	0.21*	0.16	0.40*	0.28*	0.27*

*$P < .01$.

Importantly, the 5 forms of childhood trauma were moderately correlated with each other (range, 0.30–0.48). The 3 ratings of pain (now, past month, past year) were also highly correlated with each other (range, 0.73–0.88), as were the 3 subscales of the PCS (each of the 3 correlation coeffcients was 0.93). Accordingly, we examined unique relationships between each of the 5 forms of childhood trauma and (1) a summed score of the 3 ratings of pain and (2) the total score on the PCS by conducting multiple regression analyses, simultaneously entering all 5 forms of childhood trauma as predictor variables.

The multiple regression equation for the combined pain ratings was statistically significant ($R = 0.38$, $F_{5,236} = 8.15$, $P < .001$). However, only 2 of the 5 forms of childhood trauma demonstrated unique relationships with the pain ratings: emotional abuse (standardized $\beta = 0.17$, $t = 2.37$, $P < .05$) and sexual abuse (standardized $\beta = 0.16$, $t = 2.26$, $P < .05$). The multiple regression equation for the PCS score was statistically significant ($R = 0.44$, $F_{5,233} = 11.03$, $P < .001$) as well. However, only 1 of the 5 forms of childhood trauma, emotional abuse, demonstrated a unique relationship with PCS score (standardized $\beta = 0.32$, $t = 4.58$, $P < .001$).

DISCUSSION

In this study, all examined forms of trauma in childhood were statistically related in univariate analyses to the severity ratings for pain reported in adulthood at all time points. In a multivariate analysis, emotional abuse and sexual abuse remained statistically significantly predictive for severity of summed pain scores. Likewise, all examined forms of trauma in childhood were statistically correlated in univariate analyses to the total PCS score, as well as most of the subscales of the PCS, with the exception of physical neglect in childhood, which demonstrated a weaker relationship. In multivariate analyses, emotional abuse remained a unique predictor for the PCS score.

The most consistent association encountered in this study was between childhood emotional abuse and both self-reported pain and pain catastrophizing in adulthood. We believe that this result may be explained by the victim's perception of the degree of malevolent or malicious intrusion by the perpetrator, which may be highest with emotional abuse. Not to excuse sexual abuse in any way, but in terms

of malevolence or maliciousness, the perpetrator, in some cases of sexual abuse, may have expressed tender feelings for the victim during the abusive act. Likewise, physical abuse may be distorted by the perpetrator and/or victim in that moment as "caring enough to punish you/me." Witnessing violence, being less direct, may be loaded with less perceived intentional malevolence by the perpetrator. However, emotional abuse, when viewed in the moment, is a seemingly direct, intended, and personal perpetration of another, with little room for ambivalent feelings or misinterpretation by the victim. Therefore, in some ways, it is not surprising that emotional abuse is so strongly related to pain and pain catastrophizing.

The weakest statistical association in this study was found between childhood trauma and physical neglect. Physical neglect was defined for participants as not having one's basic life needs met. Most likely, this type of nonintrusive neglect was related to limited financial resources of the family and not the intentional withholding of positive emotions. In other words, parental care about offspring may have still been intact, despite a limited ability to care for offspring. However, the remaining forms of trauma all demonstrate intrusive elements, with likely disregard for the victim.

As a further explanation for these findings, it is possible that the negative intention of the perpetrator sets the stage for trauma dynamics in the victim. Trauma dynamics, which are characterized by hypervigilance, may heighten the risk for intense scrutiny of the external environment, as well as intense scrutiny of the internal environment or internal hypersensitivity.[19] This internal hypersensivity may partially explain a heightened reactivity to pain as well as a tendency to catastrophize pain—victims know from experience that bad things can happen (and that pain is associated with those bad things).

This study has a number of potential limitations. First, all data were self-report in nature and subject to the vicissitudes of recollection, denial, misinterpretation, and suppression. Second, we used a simplified measure to assess childhood trauma. However, this brief measure is very practical for self-report surveys in busy medical clinics. Third, some of the excluded distressed patients (n = 13) may have suffered from considerable pain and may have influenced findings in unforeseen ways had they contributed to the data. However, the number of individuals excluded because of distress was relatively small, and not all of these individuals were excluded for reasons related to pain. Finally, this study took place in a resident clinic with high levels of indigent care and government insurance; these findings may not generalize to other settings.

On a closing note, we believe that this is the largest study to date of clinical patients with regard to the examination of childhood trauma, pain, and pain catastrophizing. We examined multiple forms of childhood abuse, multiple time points for pain assessment, and pain catastrophizing and utilized a consecutive sample of outpatients. Findings demonstrate clear associations between childhood trauma and pain in adulthood, as well as childhood trauma and pain catastrophizing in adulthood, particularly the childhood trauma variable of emotional abuse. The role of childhood trauma in relationship to pain and pain catastrophizing clearly warrants further study, particularly with regard to associations with posttraumatic stress disorder, the element of hypervigilance, and the role of catastrophizing in adulthood in relationship to childhood trauma.

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