

# The Role of Trauma and Mental Health in the Treatment of Chronic Pelvic Pain: A Systematic Review of the Intervention Literature

Lisa S. Panisch<sup>1</sup>  and Lauren M. Tam<sup>1</sup>

## Abstract

Chronic pelvic pain (CPP) is a widespread health issue with unclear etiology that has been linked to a history of trauma among women. This condition is known to be highly comorbid with, and potentially exacerbated by psychiatric conditions, as well as other gynecological concerns and functional pain syndromes. Many comorbid conditions are also related to a history of trauma, and cases of CPP with comorbidity are known to be resistant to treatment. While the prevalence of a traumatic history among females with CPP has been established, less is known about how the role of trauma is addressed in the intervention literature. The purpose of this systematic review was to explore how the role of trauma, and to a lesser extent, mental health, is addressed in modern intervention studies for females with CPP. All qualitative and quantitative studies providing primary or secondary results of an intervention for females with CPP published between January 1998 and May 2018 were included and coded independently by two reviewers. Twenty-eight articles met inclusion criteria. Of these, none focused exclusively on patients with a history of trauma; one study implicitly focused on trauma-specific symptoms as an outcome, while two studies screened patients for a history of trauma. Of the 10 studies with a focus on mental health, only three simultaneously addressed trauma. To address this gap in the literature, future studies can prioritize intervention designs that place emphasis on the role of trauma in regard to patient characteristics and outcome variables.

## Keywords

chronic pelvic pain, sexual abuse, women's health, mental health, somatization

Chronic pelvic pain (CPP) is a widespread health issue experienced by women. An estimated 3.8% of women between the ages of 15 and 73 years old suffer from CPP (Zondervan et al., 1999). The condition is the most common reason for referral to gynecology clinics, and its treatment accounts for one fifth of appointments in secondary care settings (Howard, 1993). Some of the risk factors for CPP include smoking, drug or alcohol abuse, heavy menstrual flow, pelvic inflammatory disease, comorbid psychological conditions such as depression and anxiety, and a history of trauma such as sexual abuse and other forms of maltreatment (Latthe, Mignini, Gray, Hills, & Khan, 2006; Meltzer-Brody & Leserman, 2011). Of these risk factors, sexual abuse is of particular salience, as it has been estimated that 20% of women will experience rape at some time in their life (Black et al., 2011), and an estimated one fifth of girls living in developed nations will experience sexual abuse prior to reaching adulthood (Stoltenborgh, Bakermans-Kranenburg, Alink, & van Ijzendoorn, 2015). Women with a history of sexual abuse represent a large portion of those presenting with CPP (Beck, Elzevier, Pelger, Putter, & Voorham-van der Zalm,

2009; Cichowski, Dunivan, Komesu, & Rogers, 2013; Mark, Bitzker, Klapp, & Rauchfuss, 2008; Poleshuck et al., 2005).

A frequently cited definition of CPP proposed by the American College of Obstetrics and Gynecology (2004) is noncyclic pain lasting 6 months or longer that localizes to the anatomic pelvis, anterior abdominal wall at or below the umbilicus, the lumbosacral back, or the buttocks. The severity of the pain must be enough to create functional disability or warrant medical care. However, according to a systematic review conducted by Williams, Hartmann, and Steege (2004), a consistent definition of CPP does not exist in the research literature. Unlike gynecological conditions such as endometriosis, CPP usually lacks a clear organic origin, and a complex array of

<sup>1</sup> Steve Hicks School of Social Work, University of Texas at Austin, Austin, TX, USA

## Corresponding Author:

Lisa S. Panisch, Steve Hicks School of Social Work, University of Texas at Austin, 1925 San Jacinto Blvd., Austin, TX 78712, USA.

Email: lpanisch@utexas.edu

biopsychosocial factors, including a history of trauma, are thought to play a role in its etiology (Daniels & Khan, 2010; Howard, 2003; Meltzer-Brody et al., 2007; Warren, Morozov, & Howard, 2011).

CPP is often found to be comorbid with endometriosis, and standard treatments for endometriosis focusing on organic lesions often fail to alleviate accompanying symptoms of pain (Howard, 1993, 2009; Stratton & Berkley, 2010; Stratton et al., 2008). Interestingly, endometriosis has also been linked to a history of trauma, as have other gynecological conditions frequently noted as being comorbid with CPP, such as interstitial cystitis/painful bladder syndrome (IC/PBS) and vulvodynia (Belaisch & Hart, 2008; Bodden-Heidrich et al., 1999; Cichowski et al., 2013; Chiu, Lee, Chen, Ho, & Wu, 2017; Goldstein et al., 2008; Harlow & Stewart, 2005; Khandker, Brady, Stewart, & Harlow, 2014; Mayson & Teichman, 2009; Peters, Kalinowski, Carrico, Ibrahim, & Diokno, 2007; Tietjen et al., 2010; Triolo, Laganà, & Sturlese, 2013; Warren et al., 2011).

A history of trauma is also found among patients with chronic conditions of an unclear medical etiology, including irritable bowel syndrome (IBS), fibromyalgia, and conversion disorder and other somatization disorders (Näring, 2007; Roelofs & Spinhoven, 2007). Early traumatic experiences have been known to negatively impact physiological processes and structures, such as the endocrine system and hypothalamic–pituitary axis, in ways that may predispose individuals to or exacerbate illnesses such as chronic pain syndromes (Heim, Ehler, Hanker, & Hellhammer, 1998; Mayson & Teichman, 2009). Study findings reveal that CPP is often comorbid with IBS and fibromyalgia (Fillingim & Maixner, 2000; Whitehead, Palsson, & Jones, 2002).

Of further concern is that CPP is often further exacerbated by comorbid psychiatric conditions which can both predispose women to CPP and negatively impact psychosocial and sexual well-being (Latthe et al., 2006; Meltzer-Brody & Leserman, 2011; Reed et al., 2000). In part, these comorbidities may be due to the high prevalence of trauma experienced by this population, as a history of trauma has been associated with comorbidity mental health conditions including depression, anxiety, substance use disorders, and post-traumatic stress disorder (PTSD; Chen et al., 2010; Meltzer-Brody et al., 2007; Wilson, 2010). Women with CPP who have a history of trauma have also reported higher levels of psychological and somatoform dissociation than their peers who did not have a history of trauma (Nijenhuis et al., 2003). The role of dissociation warrants notable attention, as researchers have found positive associations between dissociation and negative mental and physical health outcomes both in general and clinical populations, as well as in specific relation to patients with CPP (Badura, Reiter, Altmaier, Rhomberg, & Elas, 1997; Gupta, Vujcic, & Gupta, 2017; Kendall-Tackett & Klest, 2009; Nijenhuis et al., 2003; Walker & Katon, 1992).

As CPP is considered to be treatment-resistant in many cases, particularly those with high comorbidities (Howard, 2003), it is important for researchers and clinicians to develop

and evaluate existing treatment approaches meant to alleviate symptoms and promote well-being among patients. Due to the high prevalence of traumatic experiences among patients who have CPP, it may be salient to explore interventions that are specific to patients with a traumatic history. This may be a particularly fruitful area of endeavor, as emerging research in neuroplasticity indicates that neurobiological correlates of pain- and trauma-related syndromes, once thought to be intractable, can benefit from targeted forms of treatment (Kluetsch et al., 2014; Nicholson et al., 2017; Steege & Siedhoff, 2014). Unfortunately, the majority of studies examining the relationships between a history of trauma and CPP are descriptive in nature; it is unclear how, if at all, this specific subpopulation is addressed in the intervention literature for CPP.

The purpose of this study was to explore the current state of the intervention literature regarding how trauma is addressed when treating patients with CPP. As such, this review sought to answer the following primary research question:

**Research Question 1:** How, and to what extent, is the topic of trauma addressed in intervention studies of women with CPP?

Due to the comorbidity of mental health issues among patients with CPP, as well as the relationships between a history of trauma and psychiatric illnesses, this study also examined the role of mental health in the intervention literature. Therefore, the secondary research question was:

**Research Question 2:** How, and to what extent, is the topic of mental health addressed in intervention studies of women with CPP?

## Method

A systematic review was selected as the methodological approach in this study. Researchers and clinicians can efficiently utilize systematic reviews to rapidly map the existing literature, while the avoiding unnecessary expenditures of time and finances needed to purchase and read multiple journal articles. This review differs from many others by nature of the research questions, which focus less on the effectiveness of an intervention on a given outcome than on the nature of the outcomes themselves, along with issues of measurement and patient characteristics.

Articles considered for this review included intervention studies of women experiencing CPP. A search strategy was developed in consultation with a reference librarian at a large, public, research-intensive university. Using the search string (“chronic pelvic pain”) AND SU (treatment OR intervention OR therapy) AND (“randomized controlled trial” OR “controlled trial” OR “Quasi-experimental” OR “case study”), the following databases were searched on May 15, 2018: CINAHL Plus with Full Text, MEDLINE, PsycARTICLES, Psychology and Behavioral Sciences Collection, and PsycINFO. All intervention studies conducted between January

1, 1998, and May 15, 2018, of a quantitative or qualitative nature that provided primary or secondary results were included. All study designs were included, with the exception of systematic or scoping reviews and meta-analyses. Participants were included if they were female, suffering from a CPP syndrome, or a related condition associated with a history of trauma (e.g., IC/PBS, endometriosis; Chiu et al., 2017; Goldstein et al., 2008; Mayson & Teichman, 2009; Peters et al., 2007; Tietjen et al., 2010), on the condition that CPP was a primary complaint. Studies were excluded if any participants in the sample were male, were written in a language other than English, or did not provide results of the intervention. No exclusion criteria were specified in regard to a participant's age, race/ethnicity, nationality, socioeconomic status, education level, or presence of comorbid health conditions. In addition, no studies were excluded on the basis of the type of intervention used.

After all appropriate articles were identified, a coding process commenced. All included articles were reviewed and coded by the first and second author, with the agreement that discrepancies would be discussed between them, and a third coder would be recruited when mutual decisions were unable to be reached.

The primary goal of the coding process was to determine whether the intervention literature for women with CPP addressed the issue of trauma, and if so, how and to what extent. To answer this question, data were collected regarding study procedures, such as screening patients for a history of trauma or for trauma-specific mental health conditions, as well as whether and how trauma was measured as a study outcome. In addition, all areas of the text that addressed trauma-specific topics, including the prevalence of trauma in the analytic sample or related populations, the influence of traumatic experiences on any health- or psychosocial-related issue, and so on, were identified. All relevant text was collated into a Microsoft Word document and conceptually analyzed to identify any themes or common patterns of use among the articles.

Traumatic experiences were operationalized by the definition provided by the Substance Abuse and Mental Health Services Administration (2012), as resulting:

from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being. (p. 271)

Articles were coded to see whether and how patients were screened for a history of traumatic events and whether experiences of past trauma were part of the inclusion criteria. Each article was coded to see whether it contained an explicitly mentioned trauma-specific condition and whether the alleviation of traumatic symptoms was explicitly or implicitly expressed as an outcome of the intervention. An example of an implicitly expressed outcome would include the targeting of traumatic symptoms in order to leverage a mediating impact on

any explicitly stated outcomes. Trauma-specific mental health conditions were defined as conditions related to a trauma-specific diagnostic criterion, as classified in the Fifth Edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*; American Psychiatric Association, 2013). Trauma-specific outcomes were defined as symptoms associated with these conditions.

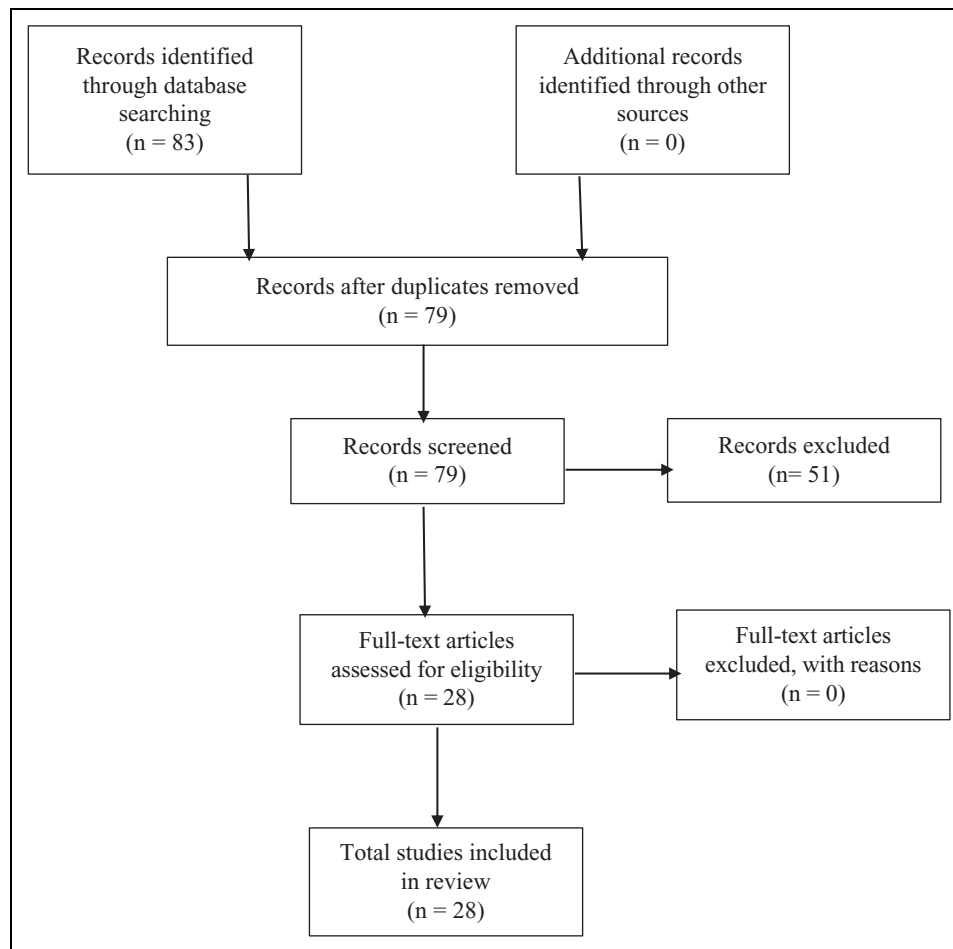
The secondary goal was to evaluate how mental health was addressed in these studies. Non-trauma-specific mental health conditions were of diagnoses of a clinical nature unrelated to trauma, as defined by the *DSM-5* and measured by validated screening and assessment tools. Mental health outcomes were defined as symptoms related to these conditions. Articles were coded to capture whether and how patients were screened for mental health conditions and whether the interventions targeted mental health-specific outcomes.

## Results

The search was conducted in accordance with the reporting guidelines recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, Altman, & Prisma Group, 2009). The full search process is detailed in Figure 1. The initial search yielded a total of 79 original articles, after four were removed as duplicates. A screening of the titles and abstracts of all articles then commenced. Excluded articles included 4 reviews, 16 that either did not provide results of an intervention or were of a nonpeer reviewed nature (including those explaining study designs, letters to the editor, and opinion pieces, etc.), and 4 that were printed in languages other than English. In addition, the patient population did not meet inclusion criteria in 26 studies. The remaining 28 articles were screened and included in the results. Both coders agreed upon the inclusion of the 28 articles described below.

### Sample Characteristics

Across all studies, the total number of participants was 2,090. When studies used the same group of participants, they were only included once in the total count. Sample sizes in the included studies ranged from one single case study (Goyal et al., 2017) to a sample of 487 participants (Daniels et al., 2009). Of the eight studies that provided information on the race and/or ethnicity of their participants, seven had either a majority or a full sample of White women. Black women comprised the majority (66%) of participants in one study (Poleshuck et al., 2014). CPP was the primary diagnosis for the patients in 10 of the studies. Patients in one study were diagnosed with CPP along with pelvic floor spasm, while those in another study had been diagnosed with both CPP and depression. CPP in association with comorbid endometriosis was the primary diagnosis in 15 studies, some of which included other conditions related to endometriosis, such as dyspareunia, abnormal uterine bleeding, and dysmenorrhea. In one study,



**Figure 1.** Flow of information from identification to inclusion of studies.

patients had a primary diagnosis of IC/PBS. Additional details are provided in Table 1.

### Study Characteristics

More than three quarters of the studies (79%;  $n = 22$ ) used experimental methodology. The remaining six studies utilized a variety of nonexperimental designs including case studies, cross-sectional studies, longitudinal studies with no control group, and so on. Aside from the different types of biomedical treatments (i.e., pharmaceutical, surgical, etc.) used, many studies also implemented forms of complementary and psychotherapeutic interventions including chiropractic care, acupuncture, biofeedback, mindfulness meditation, yoga, and variations of psychotherapy. Of the 23 articles providing information about the location of the study, the majority ( $n = 9$ ) took place in the United States. Four studies each were, respectively, conducted in Brazil and the United Kingdom. Of the remaining studies, one took place in each of the following nations: Australia, Denmark, Germany, Italy, New Zealand, and Thailand.

Overall, the rigor of the studies is enhanced by the prevalence of experimental designs and use of validated measures.

Nonetheless, their quality is tempered by the lack of information on patient characteristics that may serve as potential confounders, such as race/ethnicity and, in some cases, age. A full outline of study characteristics can be found in Table 1.

### Outcomes and Topics Addressed

An overview of the results in relation to screening information, outcomes, and topics addressed in this review is provided in Table 2. In total, 15 studies did not include any information related to the research questions (Daniels et al., 2009; Gonçalves, Barros, & Bahamondes, 2017; Goyal et al., 2017; Hansen, Kesmodel, Kold, & Forman, 2017; Hawkins & Hart, 2003; Highfield et al., 2006; Johnson et al., 2004; Ling, 1999; Mira, Giraldo, Yela, & Benetti-Pinto, 2015; Onwude et al., 2004; Santanam, Kavtaradze, Murphy, Dominguez, & Parthasarathy, 2013; Seracchioli et al., 2010; Stones, Bradbury, & Anderson, 2001; Tanmahasamut et al., 2017; Wykes, Clark, Chakravati, Mann, & Gupta, 2006).

**Trauma.** No studies were found that focused exclusively on patients with a history of trauma. Only two of the reviewed studies explicitly screened their patients for either a history of

**Table 1.** Summary of Study and Participant Characteristics.

Author (Year)	Study Methodology	Study Location	Sample Size	Mean Age/Age Range (in Years)	Racial/Ethnic Characteristics	Patient Condition	Intervention Type
Abbott, Jarvis, Lyons, Thomson, and Vancaille (2006)	Experimental	Australia	Total n = 60	30.6 (Tx), 30.5 (control)/18–55 (total sample)	White = 90% (Tx), 90% (control), other = 10% (Tx), 10% (control)	CPP and pelvic floor spasm	Botulinum toxin type A
Ahn, Schnyer, Conboy, Laufer, and Wayne (2009)	Experimental	Massachusetts, United States	Tx n = 30, control n = 30 Total n = 18	17.9/14–22	White = 100%, Hispanic <sup>a</sup> = 14%	Endometriosis-related CPP	Electrodermal measures of jing-Wei points
Bond, Pape, and Ayre (2017)	Experimental	Wales, United Kingdom	Tx = 10, control = 8 Total n = 9	34.22/18–54	Not provided	Interstitial cystitis/painful bladder syndrome	Therapeutic wand in addition to physiotherapy
Daniels et al. (2009)	Experimental	United Kingdom	Tx n = 5, control n = 4 Total n = 487	30.6 (Tx), 30.5 (control)/17–64 (Tx), 17–57 (control)	Not provided	CPP	Laparoscopic uterosacral nerve ablation
Engel, Walker, Engel, Bullis, and Armstrong (1998)	Experimental	Washington, United States	Tx n = 243, control n = 244 Total n = 23	29/19–45	Not provided	CPP	Sertraline
Fox, Flynn, and Allen (2011)	Observational	Rhode Island, United States	Total n = 22	42.3/range not provided	Not provided	CPP	Mindfulness meditation
Gonçalves, Barros, and Bahamondes (2017)	Experimental	Sao Paulo, Brazil	Total n = 40	34.88/range, not provided	Not provided	Endometriosis-related CPP	Hatha yoga
Goyal et al. (2017)	Observational (single case study)	Not provided	Tx n = 28, control n = 12 Total n = 1	29/range not applicable (single case)	Not provided	Endometriosis-related CPP and abnormal uterine bleeding	Osteopathic manipulative treatment
Hansen, Kesmodel, Kold, and Forman (2017)	Observational	Denmark	Total n = 10	48/33–68	Not provided	Endometriosis-related CPP	Mindfulness-based psychological treatment

(continued)

**Table 1.** (continued)

Author (Year)	Study Methodology	Study Location	Sample Size	Mean Age/Age Range (in Years)	Racial/Ethnic Characteristics	Patient Condition	Intervention Type
Hawk et al. (2002)	Experimental	United States	Total n = 39 Tx n = 20, control n = 19	34.2/range not provided	White = 82%, Other = 18%	CPP	Chiropractic care
Hawkins and Hart (2003)	Observational	Not provided	Total n = 5	Not provided	White = 60%, Black = 20%, Other ("Hispanic/Asian") = 20%	Endometriosis-related CPP	Thermal biofeedback
Highfield et al. (2006)	Observational	Massachusetts, United States	Total n = 2	Not provided	Not provided	Endometriosis-related CPP	Acupuncture
Johnson et al. (2004)	Experimental	Auckland, New Zealand	Total n = 123 Tx (endometriosis) n = 32, Tx (no endometriosis) n = 22, control (endometriosis) n = 35, control (no endometriosis) n = 34	Tx (endometriosis) = 30, Tx (no endometriosis) = 29, control (endometriosis) = 29, control (no endometriosis) = 29/range not provided	Not provided	CPP	Laparoscopic uterine nerve ablation
Lewis et al. (2016)	Experimental	United Kingdom	Total n = 47	Not provided	White = 100%	CPP	Gabapentin
Ling (1999)	Experimental	United States	Tx n = 22, control n = 25 Total n = 95	Not provided	Not provided	CPP	Depot leuprolide
Meissner et al. (2016)	Experimental	Germany	Tx n = 49, control n = 46 Total n = 67	34.6 (total sample), 35.0 (Tx), 36.2 (control)/33.3–36.6 (Tx), 34.5–37.9 (control)	Not provided	Endometriosis-related CPP	Psychotherapy with somatosensory stimulation
Mira, Giraldo, Yela, and Benetti-Pinto (2015)	Experimental	Sao Paulo, Brazil	Tx n = 35, control n = 32 Total n = 22	36.0/range not provided	Not provided	Endometriosis-related CPP and deep dyspareunia	Transcutaneous electrical nerve stimulation
Onwude et al. (2004)	Experimental	Not provided	Tx n = 11, control n = 11 Total n = 233	31.7 years (Tx), 33.2 years (control)/range not provided	Not provided	CPP	Photographic reinforcement during postoperative counseling after diagnostic laparoscopy
Poleshuck et al. (2014)	Experimental	Not provided	Tx n = 109, control n = 124 Total n = 61 Tx n = 33, control n = 28	36.7 (total sample), 36.3 (Tx), 37.1 (control)/range not provided	White = 16.4%, Black = 65.6%, Hispanic = 13.1%, Native American/Alaska Native: 1.6%, Other (Biracial): 3.3%	CPP and depression	Interpersonal psychotherapy

(continued)

**Table 1.** (continued)

Author (Year)	Study Methodology	Study Location	Sample Size	Mean Age/Age Range (in Years)	Racial/Ethnic Characteristics	Patient Condition	Intervention Type
Santanam, Kavtaradze, Murphy, Dominguez, and Parthasarathy (2013)	Experimental	Georgia, United States	Total n = 51	Mean not provided/19–49	Not provided	Endometriosis-related CPP	Antioxidant supplementation
Schwertner et al. (2013)	Experimental	Brazil	Tx n = 46, control n = 13 Total n = 40	36.76 (Tx), 37.63 (control)/18–45 (total sample)	Not provided	Endometriosis-related CPP	Melatonin
Seracchioli et al. (2010)	Experimental	Bologna, Italy	Tx n = 20, control n = 20 Total n = 311 Tx n (continuous user) = 104, Tx n (cyclic user) = 103, control n = 104	Total = 311 Tx (continuous user) = 28.7, Tx (cyclic user) = 30.2, control = 28.7/range not provided 30.5 (Tx), 29.3 (control)/range not provided	Not provided	Endometriosis-related CPP dyspareunia, dysmenorrhea CPP	Long-term oral contraceptive pills and postoperative pain management Lofexidine hydrochloride
Stones, Bradbury, and Anderson (2001)	Experimental	Not provided	Total n = 39		Not provided		
Stratton et al. (2008)	Experimental	Maryland, United States	Tx n = 19, control n = 20 Total n = 93 Tx n = 47, control n = 46	31.1 (Tx), 32 (control)/range not provided	White = 81%, Black = 2.15%, Hispanic <sup>a</sup> = 81%, Asian/Pacific Islander = 1.07%, Other = 15.78%	Endometriosis-related CPP	Raloxifene
Tanmahasamut et al. (2017)	Experimental	Thailand	Total n = 80	29.1 (Tx), 32.7 (control)/range not provided	Not provided	Endometriosis-related CPP	Postoperative desogestrel
Teixeira, Podgaec, and Baracat (2017)	Experimental	Sao Paulo, Brazil	Tx n = 40, control n = 40 Total n = 50	34.3 (Tx), 35.3 (control)/18–45 (total sample)	Not provided	Endometriosis-related CPP	Homeopathic potentized estrogen
Wayne et al. (2008)	Experimental	Massachusetts, United States	Tx n = 23, control n = 27 Total n = 18 Tx n = 10, control n = 8	17.8 (Tx), 17 (control)/15–21 (Tx), 13–22 (control)	White = 100% (Tx), 87.5% (control); Hispanic <sup>a</sup> = 20% (Tx), 0% (control); Other = 0% (Tx), 12.5% (control)	Endometriosis-related CPP	Acupuncture
Wykes, Clark, Chakravati, Mann, and Gupta (2006)	Observational	Birmingham, United Kingdom	Total n = 62	32/18–44	Not provided	CPP	Laparoscopic excision

<sup>a</sup> Hispanic ethnicity was measured separately from race.

**Table 2.** Outcomes and Topics Addressed in the Studies.

Author (Year)	Trauma History Screened	Trauma-Specific Mental Health Screened	Trauma as Outcome (Implicit/Explicit)	Trauma Addressed in Article	Non-Trauma-Specific Mental Health Screened	Mental Health Outcome
Abbott, Jarvis, Lyons, Thomson, and Vancaille (2006)				Yes		
Ahn, Schnyer, Conboy, Laufer, and Wayne (2009)					Yes	
Bond, Pape, and Ayre (2017)				Yes		
Daniels et al. (2009)						
Engel, Walker, Engel, Bullis, and Armstrong (1998)				Yes	Yes	Yes
Fox, Flynn, and Allen (2011)					Yes	Yes
Gonçalves, Barros, and Bahamondes (2017)						
Goyal et al. (2017)						
Hansen, Kesmodel, Kold, and Forman (2017)						
Hawk et al. (2002)	Yes			Yes		
Hawkins and Hart (2003)						
Highfield et al. (2006)						
Johnson et al. (2004)						
Lewis et al. (2016)						Yes
Ling (1999)						
Meissner et al. (2016)			Yes (implicit)	Yes		Yes
Mira, Giraldo, Yela, and Benetti-Pinto (2015)						
Onwude et al. (2004)						
Poleshuck et al. (2014)		Yes		Yes	Yes	Yes
Santanam, Kavtaradze, Murphy, Dominguez, and Parthasarathy (2013)						
Schwertner et al. (2013)					Yes	
Seracchioli et al. (2010)						
Stones, Bradbury, and Anderson (2001)						
Stratton et al. (2008)					Yes	
Tanmahasamut et al. (2017)						
Teixeira, Podgaec, and Baracat (2017)					Yes	Yes
Wayne et al. (2008)					Yes	
Wykes, Clark, Chakravati, Mann, and Gupta (2006)						

trauma or a trauma-specific mental health condition. Patients in a 2002 study by Hawk et al. were asked about a history of past sexual and/or physical abuse. When comparing the baseline characteristics of their sample to those found in similar studies, these authors found a lower prevalence of sexual/physical abuse histories among their patients with CPP, who received an intervention combining chiropractic care with Trigger Point Therapy (Hawk et al., 2002). Using the Structured Clinical Interview for the *DSM-IV* (SCID), patients with CPP and co-occurring depression participating in a randomized controlled trial for an interpersonal psychotherapeutic intervention were screened at baseline for PTSD, along with other conditions that could “potentially (cause) chronic pelvic pain” (Poleshuck et al., 2014, p. 268). A reported 36% of their sample was found to have PTSD.

None of the studies included in this review explicitly evaluated trauma as an outcome. Nonetheless, the intervention used by Meissner et al. (2016) did seek to alleviate trauma-specific symptoms. The primary outcome of this study, which used a psychotherapeutic intervention in combination with somatosensory stimulation to treat women with endometriosis-related CPP, was brain connectivity, as measured by functional magnetic resonance imaging. Secondary outcomes explicitly listed by Meissner and colleagues included self-reported ratings of pain, along with measures of physical and mental quality of life. Trait anxiety and stress were also measured. However, when describing the intervention, these authors stated that the intention of each session was to “render the patient into a stable and relaxed state free of pain and negative emotions by resolving intrusive memories related to adverse



life experiences (e.g., death of a close friend, sexual abuse, domestic violence)” (Meissner et al., 2016, p. 1135). Since the alleviation of traumatic memories was pursued as a mechanism contributing to the explicit study outcomes (i.e., pain reduction and enhanced mental health), it could reasonably be considered an implicit outcome pursued in this intervention.

While only one study implicitly focused on trauma-specific symptoms as an outcome, five additional studies did address the topic of trauma at some point within the article. The possibility that a history of past abuse could modify results of a randomized, double-blind crossover trial examining the use of an antidepressant in the treatment of CPP was posited by Engel, Walker, Engel, Bullis, and Armstrong (1998). When discussing the effects of psychotherapy, Abbott, Jarvis, Lyons, Thomson, and Vancaille (2006) noted the high prevalence of sexual abuse among females with CPP and pelvic floor spasm. Quality of life, but not mental health or trauma, was addressed as an outcome in this study, which treated females with CPP and pelvic floor muscle spasms using botulinum toxin type A in a double-blinded, randomized, placebo-controlled trial. The prevalence in the literature of a sexual abuse history among females with IC/PBS was mentioned by Bond, Pape, and Ayre (2017), who went on to discuss the potential for intravaginal treatment to trigger traumatic memories or distress related to these past experiences. Bond and colleagues concluded that one of the benefits of their intervention, a therapeutic wand, was that it could be used for the self-treatment of pelvic floor muscles, thereby allowing patients to avoid the distress and/or embarrassment of relieving traumatic experiences in front of medical practitioners.

**Mental health.** Depression, anxiety, and somatization were each assessed as outcome variables in at least one of the seven studies where mental health was an outcome. The Hamilton Depression Rating Scale was used to measure depression in two (Engel, Walker, Engel, Bullis, & Armstrong, 1998; Poleshuck et al., 2014), as was the Beck Depression Inventory (Poleshuck et al., 2014; Teixeira, Podgaec, & Baracat, 2017), while another study used the Inventory of Depressive Symptomatology (Fox, Flynn, & Allen, 2011). Anxiety was measured in one study by the Beck Anxiety Inventory (Teixeira et al., 2017), while Meissner et al.’s (2016) study measured trait anxiety in particular with the State-Trait Anxiety Inventory. Both depression and anxiety were assessed by the Hospital Anxiety and Depression Scale in two studies (Lewis et al., 2016; Meissner et al., 2016). Finally, somatization was measured using the 12 somatization items from the Hopkins Symptom Checklist-90-Revised in one study (Engel et al., 1998).

In addition to studies addressing mental health-specific outcomes, patients were screened for non-trauma-specific mental health conditions (other than what was measured as an outcome) in six studies, primarily as part of the inclusion/exclusion criteria. Only one of these studies specified how non-trauma-specific mental health outcomes were assessed. The SCID was administered at baseline by Poleshuck et al. (2014); patients meeting criteria for clinical mental health

conditions including psychotic disorders, alcohol or substance misuse disorders, and bipolar 1 disorder were excluded from the study, as were those reporting suicidal intent. Two additional studies excluded patients with severe psychiatric conditions that would either prevent their understanding of the informed consent process and/or their participation in the study (Ahn, Schnyer, Conboy, Laufer, & Wayne, 2009; Wayne et al., 2008). These studies did not specify how these psychiatric conditions were identified. A history of alcohol or other substance misuse were excluded by Schwertner et al. (2013) and Wayne et al. (2008). Neither of these authors provided information on how alcohol or substance misuse was assessed. In addition, Schwertner et al. did not include patients taking anticonvulsant or antidepressant medications that could not be discontinued at least 15 days before the trial commenced. Antidepressant use was also assessed by Stratton et al. (2008), who did not specify how this information was used. Fox, Flynn, and Allen (2011) assessed patients for psychiatric diagnoses at baseline but did not provide any further information.

## Discussion

CPP has been linked to clinical mental health disorders, notably depression, anxiety, and somatization, and trauma-related disorders such as PTSD and dissociative disorders (Badura et al., 1997; Chen et al., 2010; Meltzer-Brody et al., 2007; Nijenhuis et al., 2003; Wilson, 2010). As such, it is important for clinicians treating CPP to utilize a holistic treatment paradigm that addresses not only somatic symptoms but the impact of the condition on other areas of life as well, such as mental health. However, despite the noted prevalence rate of a history of traumatic experiences among CPP patients, none of these studies focused exclusively on treating females with CPP who reported a history of trauma. Furthermore, only two studies explicitly screened their patients for a history of traumatic experiences, while just one study implicitly included trauma-specific variables as an outcome. In addition, while a larger number of interventions ( $n = 10$ ) either screened patients for non-trauma-specific mental health conditions and/or focused on such conditions as an outcome, these interventions only accounted for a minority (38%) of the total studies reviewed.

While it would be unreasonable to expect researchers to assume that all participants in a general intervention study for CPP would benefit from trauma-specific treatment, the lack of studies focusing on patients with a history of trauma is of concern. Although the etiology of CPP remains unclear, several researchers have hypothesized the role of trauma in their origins for at least some patients (Reiter & Gambone, 1990; Walker et al., 1992; Walling et al., 1994). A history of childhood trauma has been found to have negative consequences on health-related quality of life and is strongly related to mental health conditions such as depression, anxiety, and somatization, along with other psychiatric complications (Badura et al., 1997; De Venter, Demyttenaere, & Bruffaerts, 2013; Larkin & Reed, 2008). While patients with traumatic histories

do not account for the entire population of those diagnosed with CPP and related disorders, it is apparent that they make up a substantial amount, and they may comprise a group that has been neglected among current research approaches in this field. For example, Bond et al. (2017) noted the potential for patients with a history of sexual trauma to be triggered by standard, invasive intervention approaches, and how this may lead to treatment avoidance. It is possible that a history of trauma may be a cause of attrition in existing research with this population, therefore biasing results. Furthermore, although some studies did assess patients for PTSD and other psychiatric conditions at baseline, it is important to note that the diagnostic criteria for PTSD have been critiqued for not being developmentally sensitive (van der Kolk, 2005). This has implications for patients with a history of childhood trauma, as they may fail to qualify for a PTSD diagnosis (Ackerman, Newton, McPherson, Jones, & Dykman, 1998). As such, other measures of screening patients for a history of trauma may be necessary that go beyond an assessing for symptoms that meet PTSD criteria. These could include assessments for dissociation and the use of validated instruments and clinical interviews to examine a patient's history. In addition, correlations have been found between trauma and severe psychiatric conditions such as substance misuse and psychotic disorders (De Venter et al., 2013; Larkin & Read, 2008). These conditions were listed among exclusion criteria in several studies that were reviewed. Due to the prevalence of comorbidity between CPP, mental health conditions, and a history of trauma, it may be necessary to reexamine the costs and benefits of excluding females with these conditions in intervention research for CPP.

Results of this review indicate that a small number of the intervention researchers are explicitly aware of the relationships between CPP and a history of trauma. Seven studies addressed the topic of trauma at some point in their articles, with an emphasis on noting the prevalence of a history of sexual abuse among this population. In other studies, authors went beyond mentioning the prevalence of a traumatic history to discuss the potential influence of traumatic experiences on either the etiology of their patient's condition or on the effectiveness of the intervention. This underscores the need for proper assessment of trauma, as well as proper intervention once it is recognized, among CPP patients.

While 10 studies assessed and/or treated patients for non-trauma-specific mental health conditions, only 30% (Engel et al., 1998; Meissner et al., 2016; Poleshuck et al., 2014) of these simultaneously addressed the topic of trauma at some point in the article. Of these, only Meissner et al. addressed trauma as part of the intervention. Interestingly, Meissner et al. (2016) seemed to emphasize the intervention's goal of addressing trauma-related issues due to its mediating influence on the explicitly stated outcomes of anxiety, depression, pain, and quality of life, all of which demonstrated improvement in the results. In the remaining two studies, neither the antidepressant intervention used by Engel et al. (1998) nor the psychotherapeutic intervention in Poleshuck et al.'s (2014) study helped alleviate symptoms of pain, and only Poleshuck et al. reported

improvements in non-trauma-specific mental health conditions. Although issues related to trauma were mentioned in both articles, trauma was not addressed in either of these interventions (Engel et al., 1998; Poleshuck et al., 2014). As a history of trauma is thought to play a role in biophysiological alterations related to chronic pain syndromes (Heim et al., 1998; Mayson & Teichman, 2009), it is possible that the trauma-specific component of Meissner et al.'s intervention accounted for the improvement in pain, in contrast to the findings of Engel et al. and Poleshuck et al., who did not specifically address trauma in their interventions. However, this hypothesis is tentative at best; additional research is needed to parse out the impact of specific components of these interventions. These results further highlight the need to emphasize the role of trauma in intervention studies for females with CPP.

## Limitations

While this review clearly reveals a gap in the CPP intervention literature in relation to the role of trauma, several limitations should be noted. First, it is possible that additional studies meeting the inclusion criteria exist that were not captured by the search strategy. To reduce this possibility, a university reference librarian was consulted, and a rigorous approach was adhered to in all other aspects of the design. In addition, it is possible that studies included in this review did screen patients for trauma-specific mental health conditions and/or a history of traumatic experiences but did not report this in their articles. The likelihood of this occurring may be even stronger in studies with small sample sizes, or those using case study approaches, particularly if a history of trauma was not found. However, if this did occur, it was not included among the inclusion/exclusion criteria that were explicitly defined in each study. Nonetheless, it is also possible that some aspects of the interventions did address trauma-related issues that went unreported, particularly among studies providing psychotherapeutic interventions that could be tailored to the needs of individual participants. This review was intended to capture any and all aspects in which the issue of trauma was addressed in the intervention literature for women with CPP. As such, it is important to acknowledge that these results may not be fully comprehensive of what took place during each intervention. Nonetheless, all efforts were made to convey what has been reported in the published literature.

The lack of reported racial/ethnic characteristics of the participants in 20 studies is concerning. This is compounded by the fact that only one of the studies reporting this information had a non-White majority of participants. With such limited diversity reported among participants in the CPP intervention literature, it is difficult to make any assumptions about the effectiveness of treatment for non-White patients. The findings of this study therefore reveal yet another type of underrepresentation of patients in the CPP intervention literature.

## Practice, Policy, and Research

Findings related to the first research question reveal a paucity of focus on the role of trauma in the intervention literature for treating women with CPP, despite the notable prevalence of traumatic experiences among this population. Only three interventions addressed trauma in terms of either screenings or outcomes. In contrast, patients were screened for non-trauma-specific mental health conditions and/or non-trauma-specific mental health conditions were an outcome in over a third of the studies. In relation to the second research question, while it would be ideal for more studies to address role of mental health, the extent of focus on non-trauma-specific mental health far exceeds that of trauma despite the rates of comorbid mental health conditions found among traumatized women with CPP. This has several implications for researchers and practitioners.

When treating complex medical phenomena such as CPP, a holistic perspective that incorporates knowledge of biological, interpersonal, psychosocial, and environmental factors has been recommended (Meltzer-Brody & Leserman, 2011; Rosenbaum, 2009). This perspective is congruent with interprofessional models of medical care, which have gained increasing popularity in recent years among the allied health professions, with a substantial amount of resources being dedicated to the evaluation of interprofessional education, training, and practice (D'amour & Oandasan, 2005; Schmitt, Gilbert, Brandt, & Weinstein, 2013). Interprofessional care models seek to transform the traditional medical model into an integrated and collaborative approach between providers of different professions who treat the same patients (D'amour & Oandasan, 2005; McCallin, 2005). Treatment models that emphasize the contributions of different disciplines, including mental health-oriented fields like psychology and social work, may be better equipped to work with multifaceted conditions such as CPP than a traditional approach in which a single physician solely evaluates and manages the patient. This is especially relevant to the treatment of CPP patients since not all of the allied professions receive trauma-specific training or education in their respective academic programs. Because of the high prevalence of a history of trauma among women with CPP, it may be beneficial for providers to incorporate a trauma-focused approach into their treatment process (Reeves, 2015; Rosenbaum, 2009). Such an approach would seek to incorporate procedures that would minimize the risk of retraumatization and open communication between providers and patients (Reeves, 2015; Rosenbaum, 2009). As such, mental health providers can serve as valuable members on these interdisciplinary teams.

While there is an urgent need to obtain rigorous intervention studies, it is important to acknowledge that the process for conducting rigorous intervention research is costly and time-consuming. Until these studies are conducted, mental health practitioners in interprofessional settings can utilize data from prevalence studies of women with CPP and trauma histories to justify the need for using trauma screenings and a trauma-

informed approach to treatment. Furthermore, they can use the current study to advocate the need for conducting trauma-specific treatment interventions to their medical colleagues. Because mental health practitioners receive specialized training and education on working with traumatized clientele, they can serve a vital role in the selection of trauma-focused interventions. Additionally, as members of the treatment team most likely establish a trusting rapport with patients who fosters therapeutic engagement with patients regarding trauma, mental health practitioners can make substantial contributions when designing studies and creating and implementation strategies meant to enhance patient recruitment and retention.

In order to provide patients with the most beneficial treatment, interventions must be rigorously evaluated for effectiveness with their intended population. The need to focus on trauma-specific factors is especially pertinent in light of research indicating that biophysiological and psychosocial concerns among patients with CPP exist that may be unique to those with a history of trauma (Badura et al., 1997; Heim et al., 1998; Latthe et al., 2006; Meltzer-Brody & Leserman, 2011; Nijenhuis et al., 2003; Reed et al., 2000). The effectiveness of any treatment approach for women with CPP who have a history of trauma would be enhanced by the availability of empirical data on interventions specific for this population. Unfortunately, this review has found that a dearth of such information currently exists.

To address this notable gap in the intervention literature, several recommendations are proposed for future researchers: (1) Researchers are encouraged to conduct intervention studies specifically targeted toward women with CPP who have a history of trauma. (2) There is a need to include a diverse range of women from different racial and ethnic backgrounds and to provide a full report of participant demographic characteristics in all publications resulting from the study. (3) These studies should examine trauma-related and mental health-related variables in addition to symptoms of CPP (i.e., pain) as an outcome. (4) Where feasible, using multiple types of comparison and control groups is recommended. Different treatment groups comparing patients with and without a history of trauma should be examined along with similar control groups. (5) A history of trauma could be part of the inclusion criteria in nonexperimental pilot studies meant to gather information about the effectiveness of an intervention with this population prior to the commencement of a larger clinical trial with control groups. (6) At minimum, across all study designs, researchers should screen their patients for a history of traumatic experiences, as well as for both trauma-specific and non-trauma-specific mental health conditions and report the prevalence of these conditions found among their sample. (7) Researchers should also report comprehensive information about the measures used to conduct these screenings and assessments, along with any components of an intervention meant to address trauma. If future interventions that address trauma-specific factors are shown to alleviate symptoms and enhance well-being among women with CPP, researchers and clinicians must acknowledge the

importance of addressing these patients as a subpopulation with unique clinical characteristics and treatment needs.


### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### ORCID iD

Lisa S. Panisch  <https://orcid.org/0000-0001-9463-129X>

### References

- Abbott, J. A., Jarvis, S. K., Lyons, S. D., Thomson, A., & Vancaille, T. G. (2006). Botulinum toxin type A for chronic pain and pelvic floor spasm in women: A randomized controlled trial. *Obstetrics & Gynecology, 108*, 915–923.
- Ackerman, P. T., Newton, J. E., McPherson, W. B., Jones, J. G., & Dykman, R. A. (1998). Prevalence of post traumatic stress disorder and other psychiatric diagnoses in three groups of abused children (sexual, physical, and both). *Child Abuse & Neglect, 22*, 759–774.
- Ahn, A. C., Schnyer, R., Conboy, L., Laufer, M. R., & Wayne, P. M. (2009). Electrodermal measures of Jing-Well points and their clinical relevance in endometriosis-related chronic pelvic pain. *The Journal of Alternative and Complementary Medicine, 15*, 1293–1305.
- American College of Obstetricians and Gynecologists. (2004). Chronic pelvic pain: ACOG practice bulletin No. 51. *Obstetrics & Gynecology, 103*, 589–605.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Badura, A. S., Reiter, R. C., Altmaier, E. M., Rhomberg, A., & Elas, D. (1997). Dissociation, somatization, substance abuse, and coping in women with chronic pelvic pain. *Obstetrics & Gynecology, 90*, 405–410.
- Beck, J. J., Elzevier, H. W., Pelger, R., Putter, H., & Voorham-van der Zalm, P. J. (2009). Multiple pelvic floor complaints are correlated with sexual abuse history. *The Journal of Sexual Medicine, 6*, 193–198.
- Belaisch, J., & Hart, J. P. (2008). Endometriosis and sexual abuse. In M. J. Smith (Ed.), *Child sexual abuse: Issues and challenges* (pp. 155–165). New York, NY: Nova Science.
- Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, M. T., . . . Stevens, M. R. (2011). *The national intimate partner and sexual violence survey: 2010 Summary report*. Retrieved from the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control website: [https://www.cdc.gov/violenceprevention/pdf/nisvs\\_report2010-a.pdf](https://www.cdc.gov/violenceprevention/pdf/nisvs_report2010-a.pdf)
- Bodden-Heidrich, R., Küppers, V., Beckmann, M. W., Ozörnek, M. H., Rechenberger, I., & Bender, H. G. (1999). Psychosomatic aspects of vulvodinia: Comparison with the chronic pelvic pain syndrome. *The Journal of Reproductive Medicine, 44*, 411–416.
- Bond, J., Pape, H., & Ayre, C. A. (2017). Efficacy of a therapeutic wand in addition to physiotherapy for treating bladder pain syndrome in women: A pilot randomized controlled trial. *Journal of Pelvic, Obstetric, & Gynaecological Physiotherapy, 120*, 12–27.
- Chen, L. P., Murad, M. H., Paras, M. L., Colbenson, K. M., Sattler, A. L., Goranson, E. N., . . . Zirakzadeh, A. (2010, July). Sexual abuse and lifetime diagnosis of psychiatric disorders: Systematic review and meta-analysis. *Mayo Clinic Proceedings, 85*, 618–629.
- Chiu, C. D., Lee, M. H., Chen, W. C., Ho, H. L., & Wu, H. C. (2017). Childhood trauma perpetrated by close others, psychiatric dysfunction, and urological symptoms in patients with interstitial cystitis/bladder pain syndrome. *Journal of Psychosomatic Research, 93*, 90–95.
- Cichowski, S. B., Dunivan, G. C., Komesu, Y. M., & Rogers, R. G. (2013). Sexual abuse history and pelvic floor disorders in women. *Southern Medical Journal, 106*, 675–678.
- D'amour, D., & Oandasani, I. (2005). Interprofessionality as the field of interprofessional practice and interprofessional education: An emerging concept. *Journal of Interprofessional Care, 19*, 8–20.
- Daniels, J., Gray, R., Hills, R. K., Latthe, P., Buckley, L., Gupta, J., . . . Lilford, R. (2009). Laparoscopic uterosacral nerve ablation for alleviating chronic pelvic pain: A randomized controlled trial. *Journal of the American Medical Association, 302*, 955–961.
- Daniels, J. P., & Khan, K. S. (2010). Chronic pelvic pain in women. *British Medical Journal, 341*, 772–775.
- De Venter, M., Demyttenaere, K., & Bruffaerts, R. (2013). The relationship between adverse childhood experiences and mental health in adulthood: A systematic literature review. *Tijdschrift Voor Psychiatrie, 55*, 259–268.
- Engel, C. C., Walker, E. A., Engel, A. L., Bullis, J., & Armstrong, A. (1998). A randomized, double-blind crossover trial of sertraline in women with chronic pelvic pain. *Journal of Psychosomatic Research, 44*, 203–207.
- Fillingim, R. B., & Maixner, W. (2000). Sex related factors in temporomandibular disorders. In R. B. Fillingim (Ed.), *Sex, gender and pain* (pp. 309–326). Seattle, WA: IASP.
- Fox, S. D., Flynn, E., & Allen, R. H. (2011). Mindfulness meditation for women with chronic pelvic pain: A pilot study. *The Journal of Reproductive Medicine, 56*, 158–162.
- Goldstein, H. B., Safaiean, P., Garrod, K., Finamore, P. S., Kellogg-Spadt, S., & Whitmore, K. E. (2008). Depression, abuse and its relationship to interstitial cystitis. *International Urogynecology Journal, 19*, 1683.
- Gonçalves, A. V., Barros, N. F., & Bahamondes, L. (2017). The practice of hatha yoga for the treatment of pain associated with endometriosis. *The Journal of Alternative and Complementary Medicine, 23*, 45–52.
- Goyal, K., Goyal, M., Narkeesh, K., Samuel, A. J., Sharma, S., Chatterjee, S., & Arumugam, N. (2017). The effectiveness of osteopathic manipulative treatment in an abnormal uterine bleeding related pain and health related quality of life (HR-QoL): A case report. *Journal of Bodywork and Movement Therapies, 21*, 569–573.
- Gupta, M. A., Vujcic, B., & Gupta, A. K. (2017). Dissociation and conversion symptoms in dermatology. *Clinics in Dermatology, 35*, 267–272.

- Hansen, K. E., Kesmodel, U. S., Kold, M., & Forman, A. (2017). Long-term effects of mindfulness-based psychological intervention for coping with pain in endometriosis: A six-year follow-up on a pilot study. *Nordic Psychology, 69*, 100–109.
- Harlow, B. L., & Stewart, E. G. (2005). Adult-onset vulvodynia in relation to childhood violence victimization. *American Journal of Epidemiology, 161*, 871–880.
- Hawk, C., Long, C. R., Reiter, R., Davis, C. S., Cambron, J. A., & Evans, R. (2002). Issues in planning a placebo-controlled trial of manual methods: Results of a pilot study. *The Journal of Alternative & Complementary Medicine, 8*, 21–32.
- Hawkins, R. S., & Hart, A. D. (2003). The use of thermal biofeedback in the treatment of pain associated with endometriosis: Preliminary findings. *Applied Psychophysiology and Biofeedback, 28*, 279–289.
- Heim, C., Ehler, U., Hanker, J. P., & Hellhammer, D. H. (1998). Abuse-related posttraumatic stress disorder and alterations of the hypothalamic-pituitary-adrenal axis in women with chronic pelvic pain. *Psychosomatic Medicine, 60*, 309–318.
- Highfield, E. S., Laufer, M. R., Schnyer, R. N., Kerr, C. E., Thomas, P., & Wayne, P. M. (2006). Adolescent endometriosis-related pelvic pain treated with acupuncture: Two case reports. *Journal of Alternative & Complementary Medicine, 12*, 317–322.
- Howard, F. M. (1993). The role of laparoscopy in chronic pelvic pain: Promise and pitfalls. *Obstetrical & Gynecological Survey, 48*, 357–387.
- Howard, F. M. (2003). Chronic pelvic pain. *Obstetrics & Gynecology, 101*, 594–611.
- Howard, F. M. (2009). Endometriosis and mechanisms of pelvic pain. *Journal of Minimally Invasive Gynecology, 16*, 540–550.
- Johnson, N. P., Farquhar, C. M., Crossley, S., Yu, Y., Peperstraten, A. M., Sprecher, M., & Suckling, J. (2004). A double-blind randomised controlled trial of laparoscopic uterine nerve ablation for women with chronic pelvic pain. *BJOG: An International Journal of Obstetrics & Gynaecology, 111*, 950–959.
- Kendall-Tackett, K., & Klest, B. (2009). Causal mechanisms and multidirectional pathways between trauma, dissociation, and health. *Journal of Trauma & Dissociation, 10*, 129–134.
- Khandker, M., Brady, S. S., Stewart, E. G., & Harlow, B. L. (2014). Is chronic stress during childhood associated with adult-onset vulvodynia? *Journal of Women's Health, 23*, 649–656.
- Kluetsch, R. C., Ros, T., Théberge, J., Frewen, P. A., Calhoun, V. D., Schmahl, C., . . . Lanius, R. A. (2014). Plastic modulation of PTSD resting-state networks and subjective wellbeing by EEG neurofeedback. *Acta Psychiatrica Scandinavica, 130*, 123–136.
- Larkin, W., & Read, J. (2008). Childhood trauma and psychosis: Evidence, pathways, and implications. *Journal of Postgraduate Medicine, 54*, 287.
- Latthe, P., Mignini, L., Gray, R., Hills, R., & Khan, K. (2006). Factors predisposing women to chronic pelvic pain: Systematic review. *British Medical Journal, 332*, 749–755.
- Lewis, S. C., Bhattacharya, S., Wu, O., Vincent, K., Jack, S. A., Critchley, H. O., . . . Horne, A. W. (2016). Gabapentin for the management of chronic pelvic pain in women (GaPP1): A pilot randomised controlled trial. *PLoS One, 11*, e0153037.
- Ling, F. W. (1999). Randomized controlled trial of depot leuprolide in patients with chronic pelvic pain and clinically suspected endometriosis. *Obstetrics & Gynecology, 93*, 51–58.
- Mark, H., Bitzker, K., Klapp, B. F., & Rauchfuss, M. (2008). Gynecological symptoms associated with physical and sexual violence. *Journal of Psychosomatic Obstetrics and Gynecology, 29*, 167–175.
- Mayson, B. E., & Teichman, J. M. (2009). The relationship between sexual abuse and interstitial cystitis/painful bladder syndrome. *Current Urology Reports, 10*, 441–447.
- McCallin, A. (2005). Interprofessional practice: Learning how to collaborate. *Contemporary Nurse, 20*, 28–37.
- Meissner, K., Schweizer-Arau, A., Limmer, A., Preibisch, C., Popovici, R. M., Lange, I., . . . Beissner, F. (2016). Psychotherapy with somatosensory stimulation for endometriosis-associated pain. *Obstetrics & Gynecology, 128*, 1134–1142.
- Meltzer-Brody, S., & Leserman, J. (2011). Psychiatric comorbidity in women with chronic pelvic pain. *CNS Spectrums, 16*, 29–35.
- Meltzer-Brody, S., Leserman, J., Zolnoun, D., Steege, J., Green, E., & Teich, A. (2007). Trauma and posttraumatic stress disorder in women with chronic pelvic pain. *Obstetrics & Gynecology, 109*, 902–908.
- Mira, T. A., Giraldo, P. C., Yela, D. A., & Benetti-Pinto, C. L. (2015). Effectiveness of complementary pain treatment for women with deep endometriosis through transcutaneous electrical nerve stimulation (TENS): Randomized controlled trial. *European Journal of Obstetrics and Gynecology and Reproductive Biology, 194*, 1–6.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G., & PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*, e1000097.
- Närning, G. (2007). Somatoform dissociation and traumatic experiences in patients with rheumatoid arthritis and fibromyalgia. *Clinical and Experimental Rheumatology, 25*, 872–877.
- Nicholson, A. A., Rabellino, D., Densmore, M., Frewen, P. A., Paret, C., Kluetsch, R., . . . Reiss, J. (2017). The neurobiology of emotion regulation in posttraumatic stress disorder: Amygdala downregulation via real-time fMRI neurofeedback. *Human Brain Mapping, 38*, 541–560.
- Nijenhuis, E. R. S., Van Dyck, R., Ter Kuile, M. M., Mourits, M. J. E., Spinhoven, P., & Van der Hart, O. (2003). Evidence for associations among somatoform dissociation, psychological dissociation and reported trauma in patients with chronic pelvic pain. *Journal of Psychosomatic Obstetrics & Gynecology, 24*, 87–98.
- Onwude, J. L., Thornton, J. G., Morley, S., Lilliman, J., Currie, I., & Lilford, R. J. (2004). A randomised trial of photographic reinforcement during postoperative counselling after diagnostic laparoscopy for pelvic pain. *European Journal of Obstetrics and Gynecology and Reproductive Biology, 112*, 89–94.
- Peters, K. M., Kalinowski, S. E., Carrico, D. J., Ibrahim, I. A., & Diokno, A. C. (2007). Fact or fiction—Is abuse prevalent in patients with interstitial cystitis? Results from a community survey and clinic population. *The Journal of Urology, 178*, 891–895.
- Poleshuck, E. L., Dworkin, R. H., Howard, F. M., Foster, D. C., Shields, C. G., Giles, D. E., & Tu, X. (2005). Contributions of

- physical and sexual abuse to women's experiences with chronic pelvic pain. *Journal of Reproductive Medicine*, 50, 91–100.
- Poleshuck, E. L., Gamble, S. A., Bellenger, K., Lu, N., Tu, X., Sørensen, S., . . . Talbot, N. L. (2014). Randomized controlled trial of interpersonal psychotherapy versus enhanced treatment as usual for women with co-occurring depression and pelvic pain. *Journal of Psychosomatic Research*, 77, 264–272.
- Reed, B. D., Haefner, H. K., Punch, M. R., Roth, R. S., Gorenflo, D. W., & Gillespie, B. W. (2000). Psychosocial and sexual functioning in women with vulvodynia and chronic pelvic pain: A comparative evaluation. *The Journal of Reproductive Medicine*, 45, 624–632.
- Reeves, E. (2015). A synthesis of the literature on trauma-informed care. *Issues in Mental Health Nursing*, 36, 698–709.
- Reiter, R. C., & Gambone, J. C. (1990). Demographic and historic variables in women with idiopathic chronic pelvic pain. *Obstetrics and Gynecology*, 75, 428–432.
- Roelofs, K., & Spinhoven, P. (2007). Trauma and medically unexplained symptoms: Towards an integration of cognitive and neurobiological accounts. *Clinical Psychology Review*, 27, 798–820.
- Rosenbaum, T. Y. (2009). Physical therapy evaluation of dyspareunia. In A. T. Goldstein, C. F. Pukall, & I. Goldstein (Eds.), *Female sexual pain disorders* (pp. 27–31). Oxford, England: Wiley-Blackwell.
- Santanam, N., Kavtaradze, N., Murphy, A., Dominguez, C., & Parthasarathy, S. (2013). Antioxidant supplementation reduces endometriosis-related pelvic pain in humans. *Translational Research*, 161, 189–195.
- Schmitt, M. H., Gilbert, J. H., Brandt, B. F., & Weinstein, R. S. (2013). The coming of age for interprofessional education and practice. *The American Journal of Medicine*, 126, 284–288.
- Schwertner, A., Dos Santos, C. C. C., Costa, G. D., Deitos, A., de Souza, A., de Souza, I. C. C., . . . Caumo, W. (2013). Efficacy of melatonin in the treatment of endometriosis: A phase II, randomized, double-blind, placebo-controlled trial. *Pain*, 154, 874–881.
- Seracchioli, R., Mabrouk, M., Frascà, C., Manuzzi, L., Savelli, L., & Venturoli, S. (2010). Long-term oral contraceptive pills and post-operative pain management after laparoscopic excision of ovarian endometrioma: A randomized controlled trial. *Fertility and Sterility*, 94, 464–471.
- Steege, J. F., & Siedhoff, M. T. (2014). Chronic pelvic pain. *Obstetrics & Gynecology*, 124, 616–629.
- Stoltenborgh, M., Bakermans-Kranenburg, M. J., Alink, L. R., & van Ijzendoorn, M. H. (2015). The prevalence of child maltreatment across the globe: Review of a series of meta-analyses. *Child Abuse Review*, 24, 37–50.
- Stones, R. W., Bradbury, L., & Anderson, D. (2001). Randomized placebo controlled trial of lofexidine hydrochloride for chronic pelvic pain in women. *Human Reproduction*, 16, 1719–1721.
- Stratton, P., & Berkley, K. J. (2010). Chronic pelvic pain and endometriosis: Translational evidence of the relationship and implications. *Human Reproduction Update*, 17, 327–346.
- Stratton, P., Sinaii, N., Segars, J., Koziol, D., Wesley, R., Zimmer, C., . . . Nieman, L. K. (2008). Return of chronic pelvic pain from endometriosis after raloxifene treatment: A randomized controlled trial. *Obstetrics and Gynecology*, 111, 88–96.
- Substance Abuse and Mental Health Services Administration. (2012). *SAMHSA's working definition of trauma and guidance for trauma-informed approach*. Rockville, MD: U.S. Department of Health and Human Services.
- Tanmahasamut, P., Saejong, R., Rattanachaiyanont, M., Angsuwathana, S., Techatraisak, K., & Sanga-Areekul, N. (2017). Post-operative desogestrel for pelvic endometriosis-related pain: A randomized controlled trial. *Gynecological Endocrinology*, 33, 534–539.
- Teixeira, M. Z., Podgaec, S., & Baracat, E. C. (2017). Potentized estrogen in homeopathic treatment of endometriosis-associated pelvic pain: A 24-week, randomized, double-blind, placebo-controlled study. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, 211, 48–55.
- Tietjen, G. E., Brandes, J. L., Peterlin, B. L., Eloff, A., Dafer, R. M., Stein, M. R., . . . Recober, A. (2010). Childhood maltreatment and migraine (Part III). Association with comorbid pain conditions. *Headache: The Journal of Head and Face Pain*, 50, 42–51.
- Triolo, O., Laganà, A. S., & Sturlese, E. (2013). Chronic pelvic pain in endometriosis: An overview. *Journal of Clinical Medicine Research*, 5, 153.
- van der Kolk, B. A. (2005). Developmental trauma disorder: Toward a rational diagnosis for children with complex trauma histories. *Psychiatric Annals*, 35, 401.
- Walker, E. A., & Katon, W. J. (1992). Dissociation in women with chronic pelvic pain. *The American Journal of Psychiatry*, 149, 534–537.
- Walker, E. A., Katon, W. J., Hansom, J., Harrop-Griffiths, J., Holm, L., Jones, M. L., . . . Jemelka, R. P. (1992). Medical and psychiatric symptoms in women with childhood sexual abuse. *Psychosomatic Medicine*, 54, 658–664.
- Walling, M. K., Reiter, R. C., O'hara, M. W., Milburn, A. K., Lilly, G., & Vincent, S. D. (1994). Abuse history and chronic pain in women: I. Prevalences of sexual abuse and physical abuse. *Obstetrics and Gynecology*, 84, 193–199.
- Warren, J. W., Morozov, V., & Howard, F. M. (2011). Could chronic pelvic pain be a functional somatic syndrome? *American Journal of Obstetrics & Gynecology*, 205, 199–e1.
- Wayne, P. M., Kerr, C. E., Schnyer, R. N., Legedza, A. T., Savetsky-German, J., Shields, M. H., . . . Parton, B. (2008). Japanese-style acupuncture for endometriosis-related pelvic pain in adolescents and young women: Results of a randomized sham-controlled trial. *Journal of Pediatric and Adolescent Gynecology*, 21, 247–257.
- Whitehead, W. E., Palsson, O., & Jones, K. R. (2002). Systematic review of the comorbidity of irritable bowel syndrome with other disorders: What are the causes and implications? *Gastroenterology*, 122, 1140–1156.
- Williams, R. E., Hartmann, K. E., & Steege, J. F. (2004). Documenting the current definitions of chronic pelvic pain: Implications for research. *Obstetrics & Gynecology*, 103, 686–691.
- Wilson, D. R. (2010). Health consequences of childhood sexual abuse. *Perspectives in Psychiatric Care*, 46, 56–64.
- Wykes, C. B., Clark, T. J., Chakravati, S., Mann, C. H., & Gupta, J. K. (2006). Efficacy of laparoscopic excision of visually diagnosed peritoneal endometriosis in the treatment of chronic pelvic pain. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, 125, 129–133.

Zondervan, K. T., Yudkin, P. L., Vessey, M. P., Dawes, M. G., Barlow, D. H., & Kennedy, S. H. (1999). Prevalence and incidence of chronic pelvic pain in primary care: Evidence from a national general practice database. *BJOG: An International Journal of Obstetrics & Gynaecology*, *106*, 1149–1155.

### Author Biographies

**Lisa S. Panisch** is a doctoral student in the Steve Hicks School of Social Work at the University of Texas at Austin. Her research focuses on trauma, dissociation, and health outcomes, with an emphasis on

connections between childhood sexual abuse, attachment, and women's health issues. She is interested in conducting intervention research for people with histories of child maltreatment.

**Lauren M. Tam** is a graduate of Brown University with degrees in modern culture and media and visual arts. She is currently pursuing a master of science in social work at the Steve Hicks School of Social Work at the University of Texas at Austin. As a masters student, she is interested in developmental trauma and how different traumatic experiences mediate the constellation of symptoms characterizing trauma disorders. In addition, she is interested in investigating how dissociative experiences may moderate the symptoms of trauma disorders.