



**(228) Relationships among dysmenorrhea, emotion regulation, and acute laboratory pain in healthy girls and adolescents**

*L. Payne, A. Rapkin, L. Seidman, K. Lung, L. Zeltzer, and J. Tsao; University of California, Los Angeles, Los Angeles, CA*

Painful menstruation, known as dysmenorrhea, is a chronic and disabling condition affecting up to 90% of women and adolescent girls. Despite this high prevalence, very little is known about potential factors that may share a relationship with menstrual pain. Extant research has demonstrated elevated laboratory pain responses in women with dysmenorrhea, and studies have also confirmed a relationship between dysmenorrhea and psychological factors such as depression and anxiety. Much less is known about these relationships in adolescents. Although previous studies have demonstrated relationships between emotional suppression (the tendency to control, hide, or try to diminish emotional experiences) and various pain complaints, no research to date has explored how emotion regulation relates to menstrual pain. The current study aimed to explore relationships among self-reported menstrual pain ratings, self-reported emotion regulation, and acute laboratory pain in a sample of healthy menstruating girls and adolescents, ages 10-18 (mean 14.84 years). Forty-three girls completed a packet of self-report questionnaires and participated in a series of laboratory pain tasks involving cold and pressure pain. Results indicated that, after controlling for age, average menstrual pain ratings (without medication) were significantly correlated with emotional suppression, cold pressor task anticipatory anxiety and pain intensity, and pressure task anxiety and pain intensity. In a multiple linear regression, after controlling for age, only emotional suppression emerged as a significant predictor of menstrual pain ratings. Results demonstrate the importance of relationships among menstrual pain, acute laboratory pain, and psychological variables such as emotion regulation. In addition, emotion regulation may be a particularly salient factor associated with menstrual pain that warrants further investigation. This research was supported by a grant from the National Institute of Dental and Craniofacial Research R01DE012754 (PI: Lonnie K. Zeltzer).

**(229) Ambulatory office visits and chronic pain comorbidities associated with dysmenorrhea**

*C. Chen and K. Kwekkeboom; University of Wisconsin-Madison, Madison, WI*

Dysmenorrhea affects more than 25% of adult women and up to 90% of adolescent girls, and is the leading cause of lost work hours and school absences among females. Research suggests that under-managed dysmenorrhea may exacerbate or increase the risk for subsequent chronic pain conditions (e.g., fibromyalgia and irritable bowel syndrome). Anecdotal reports suggest that only a small number of women with dysmenorrhea seek formal medical care. Little is known about outpatient service utilization related to dysmenorrhea and the prevalence of comorbid chronic pain. The purposes of this study were to describe prevalence of dysmenorrhea-related ambulatory care visits and services rendered in a large representative national sample, and to describe chronic pain comorbidities in this sample. An analysis was performed using the 2006-2010 datasets of the National Ambulatory Medical Care Surveys (NAMCS). The annual prevalence of ambulatory care visits for which dysmenorrhea was cited as a reason for seeking care ranged from .03% to .09%. Forty visits identified dysmenorrhea as the primary reason for the visit. Among those, medications were the most common treatment ordered (n=28, 70%), including analgesics (n=18, 45%), hormonal contraceptives (n=6, 15%), and nutritional supplements (n=3, 8%). Health education was ordered in 19 (48%) visits. No complementary alternative medicine was ordered. Among 232 visits citing a diagnosis of dysmenorrhea, 61 (26%) also reported comorbid pain conditions. To our knowledge, this is the first study that offers information on ambulatory care utilization in women with dysmenorrhea using a national sample. Findings suggest that women with dysmenorrhea may be under-diagnosed and under-managed. Comorbid pain conditions are prevalent among outpatient care seekers with dysmenorrhea. Future research is needed to better understand women's care-seeking for dysmenorrhea and the risks, mechanisms, and prevention of subsequent chronic pain conditions in this population.

**(230) Postmastectomy pain syndrome: an unrecognized annual billion dollar national financial burden**

*O. Visnjevac and B. Matson; State University of NY, University at Buffalo, Buffalo, NY*

Postmastectomy pain syndrome (PMPS) is a chronic neuropathic pain syndrome that may be present for many years following surgery. Current literature illustrates that PMPS has an alarmingly high incidence (20-57%, but has been reported as high as 82% at 3 months in one study). Despite various strategies of multimodal prevention or therapy, PMPS often persists for many years for those patients who are diagnosed with this syndrome (greater than 50% of patients still report pain at a mean 9-year post-op follow-up [range 7-12 years]). With greater than 200,000 new breast cancers diagnosed annually in the United States (US) alone and mean survival at 15 years post-diagnosis approaching 90%, the national burden of morbidity from this often unrecognized but commonly occurring condition is staggering. Similarly, the national financial burden of this condition has not been assessed previously. Using literature review to assess PMPS incidence, combined with national cancer survival statistics and financial reimbursement data from major health insurance providers in the US to assess cost of care, this study established a national PMPS-specific cost analysis to assess the financial burden of this syndrome in the US. Office visits represent the greatest direct expenditure at a cost of greater than \$500 million annually. Medications, morbidity, along with work and productivity loss also contribute significantly, culminating in a national financial burden for PMPS approaching an annual cost of \$1 billion USD.

**B19 Other**

**(231) Tick-Tock...genes working round the clock: associations with sleep and acute and chronic post-thoracotomy pain**

*B. Hastie, C. Klodell, R. Frye, and M. Wallace; University of Florida, Gainesville, FL*

Patients undergoing thoracotomy reportedly have up to 75% risk of developing chronic post-operative pain secondary to this life-saving surgery. Multiple factors have been implicated for increased risk of worse post-operative pain (POP) trajectory including baseline pain sensitivity, pre-existing conditions, negative affect and maladaptive coping. Additionally, sleep disruptions are common and quite significant among post-operative patients, but only recently have investigators considered multiple facets of sleep, pain and genetic susceptibility to dysfunction in both as potentially contributing risks for increased post-surgical acute and chronic pain. This new study employs a comprehensive, prospective, longitudinal model to examine the relationship between genes, sleep and pain in a thoracotomy population. 37 patients were recruited pre-operatively and followed for 6-months. Subjects underwent extensive baseline psychosocial/sleep assessments, QST, and DNA. Day-of-surgery included immediate pre-operative mood, blood-draws, plus all surgical factors. Post-operative assessments of pain and sleep were conducted at multiple time-points in-hospital (ICU, Days 1-5), follow-up at weeks 2, 6, and monthly to 6-months. Disrupted sleep was nearly ubiquitous in-hospital, but two-thirds developed lasting sleep disturbances that maintained through months 3-6. This correlated strongly ( $p < .01$ ) with increased and persistent POP patterns in approximately 50% with notable distinctions after 120-days. Sleep genes were analyzed for associations with subjective disturbance and POP. Several trends emerged with the most striking, consistent pattern among "gg" homozygotes on PER1, who reported significant sleep disruptions across nearly all domains and consistently higher acute and chronic POP lasting to 6-months ( $p < .05$  to  $.001$ ). Future research will need to confirm such patterns in larger samples and populations, but these preliminary findings reveal significant associations between pain, sleep and genes in a thoracotomy population. Identifying risk factors and potential avenues for prophylactically treating pain and/or sleep could lead to a better recovery from invasive procedures and potentially disrupt a tragic trajectory to chronic pain.