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From bedside to journal: Nurse-led research in the real world

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Background

Patients with significant pain that does not seem to be manageable with existing pain medication regimens.

An introduction to story theory:

Story theory describes a narrative happening that occurs through intentional nurse-person dialogue. Seven inquiry phases are associated with story theory, including gathering the story, reconstructing the story, connecting it to the literature, naming the complicating health challenge, describing the story plot, identifying movement toward resolving, and gathering additional stories (Smith & Liehr, 1999).

Story theory, continued

1. Gather the story
2. Compose the restructured story
3. Connect the challenge and current literature
4. Refine name of health challenge
5. Describe developing story plot
6. Identify energy/motion directed toward resolving
7. Collect additional stories about the problem

Problem: Childhood adversity

- Define the problem and reconstruct the story
 - Ask the right questions. What if this is not “drug seeking behavior”?
- Connect to literature
- Scoping literature review → narrative review

NEWS > CRIME AND PUBLIC SAFETY Dismiss Allow

Man dies 17 months after being set on fire during dispute

By JESSICA ANDERSON
PUBLISHED: May 23, 2017 at 3:25 p.m. | UPDATED: October 25, 2019 at 7:02 p.m.

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A second victim who caught fire during an altercation in White Marsh nearly two years ago has died, Baltimore County police said.

██████████ of the 900 block of Topview Drive in Edgewood, died Monday after being inadvertently set on fire during an altercation between his friend ██████████ ██████████ Dec. 4, 2015.

Police said ██████████ had been involved in an ongoing dispute.

██████████ were walking from a gas station at U.S. 40 and Allender Road when ██████████ approached the two men, who both carried gasoline containers, and punched ██████████ in the face, police said.

██████████ then doused ██████████ with gasoline and lit him on fire, police said. ██████████ who was standing near ██████████ with a container of gasoline, also became engulfed in flames, police said. Both victims remained hospitalized until their deaths.

“██████████ was a good kid who would always offer his help to anyone in need. ██████████ was an innocent bystander in this terrible tragedy. He fought hard for the past 18 months and suffered terribly. ██████████ suffering is now over and he is finally at peace,” ██████████ family said in a statement.

Study

Theory:

- Refine the name of the problem: acute and chronic pain following adversity in childhood
- Describe the plot: adversity in childhood profoundly impacts the way pain is experienced: biologically, psychologically, and socially
- Identify energy/motion directed toward resolving: pain catastrophizing, maladaptive coping

Practice:

Write proposal

IRB approval: dual approval

Study implementation

Data collection/analysis

Trust the process- it is MESSY

Specific Aims

Temporomandibular Disorder (TMD) is a disease process involving the derangement of the jaw joint and/or muscles of mastication that affects up to 15% of the general population.¹ TMD disproportionately affects women and young adults² and has been linked to physical³, psychological⁴, and hormonal changes⁵ throughout puberty. TMD is also associated with pain⁶ significantly contributing to quality of life. Pain is a biopsychosocial condition that is influenced by biologic, psychologic, and social factors that mediate the patient's perception of pain.⁶ As such, multimodal analgesia techniques for TMD pain include medication⁷, rest⁸, and heat application⁹ have limited usefulness in patients with severe TMD¹⁰. At present, although anxiety¹¹, depression¹², and other mental health diagnoses¹³⁻¹⁵ are known to impact the experience of TMD, the role of adversity in childhood in facilitating the occurrence of the disorders, has not yet been fully explored in this population. Although a causal link has not yet been established between ACEs and chronic pain, ACE-related alterations in individuals with chronic abdominal¹⁶ and gynecologic pain have been observed.¹⁷ Although not yet fully understood, alterations in the HPA-axis and endogenous opioid system may be responsible for these alterations.¹⁸ Additionally, a link has been established between ACEs and central sensitization, a known [constitutive contributor](#) to the development of chronic pain. Given the prevalence of TMD in younger adulthood, the experiences of childhood and adolescence may prove to be an important consideration in designing effective psychological components of a multimodal analgesia program.

A psychosocial factor known to influence the experience of pain is childhood adversity, commonly measured through the ACE-10 or ACE-IQ tool. Adverse childhood experiences (ACEs) have been identified as a risk factor for the development of pain and opioid use disorders in many patient populations.¹⁹ ACEs are also a significant threat to the 61% of Americans who experience them, with five of the top ten causes of death in adults related to ACE exposure.²⁰ Studies focusing on the effects of ACEs on pain phenotypes in humans are still sparse. However, ACE-related alterations in intrinsic connectivity in patients with chronic abdominal pain has been observed within the salience/executive control network, which is implicated in the pathophysiology of central pain amplification.²¹ A dose-risk relationship has also been observed between ACE history and central sensitization in several chronic pain syndromes.²² ACE exposure also worsens chronic pain,²³ risk of opioid dependence,²⁴⁻²⁶ and pain catastrophizing (PC).²⁷⁻²⁸ Understanding whether ACE exposure impacts pain intensity in these chronic pain subjects can provide valuable insight into how ACEs may mediate pain.

Importantly, early life stress produces changes in the endogenous opioid system,²⁹ that predispose survivors of adversity to the development of chronic pain.¹⁸ In chronic pain patients, early life stress produces hyperalgesia and pronociception. Strong associations have been observed between child maltreatment and PC. In one study, the relationship was shown to be independent of other risk factors, including anxiety and depression.²⁵ Reported relationships between ACEs and PC include all three dimensions of PC and several different types of ACEs, although emotional abuse seems to show the strongest association.³⁰⁻³² **We hypothesize that chronic pain subjects with moderate or high ACE exposure, will have higher pain intensity and pain severity than participants with no ACE exposure.**

The overall goal of this study is to investigate the association between ACEs and chronic pain through the lens of the biopsychosocial model of pain.³³ We propose performing a secondary data analysis of a sample of participants suffering from chronic pain to provide foundational knowledge about ACEs and pain outcomes. ACE scores were collected in subjects with confirmed chronic pain. VAS pain intensity scores and Graded Chronic Pain Scale (GCPS) scores and PC scores³⁴ were also collected. **Our study will provide novel knowledge about the association between childhood adversity and adult chronic and acute pain in chronic orofacial pain.**

Aim 1: Determine pain intensity and severity in chronic pain patients with various ACE scores.

Rationale. Although ACEs are known to increase risk of opioid use disorder (OUD)³⁵, their impact on the experience of pain in subjects with chronic orofacial pain has not been studied. **Herein, I will determine whether ACEs influence pain-related outcomes.** H1: Participants with higher ACE scores will have higher pain intensity and interference. To test this hypothesis, we will analyze the pain severity scores 402 already recruited and phenotyped chronic orofacial pain participants. ACE scores will be used to test the hypothesis that severity of pain is influenced by childhood adversity.

Aim 2: Determine pattern of PC in chronic pain patients with moderate and high ACE exposure.

Rationale. The role of expectations, as measured by VAS pain reduction expectations, will also be explored in this aim. In this aim, I will determine how pain catastrophizing (PC) in chronic pain patients varies with respect to ACE dose, as measured by ACE-IQ score. H2: PC and pain severity scores will be higher for moderate and high ACE participants than those with no ACE exposure.

Regina, Mary ???

Emily Workman
Removed acute on chronic

Regina, Mary Role of childhood what?

Emily Workman
reworded

Regina, Mary Do you mean pain circuits in the

Emily Workman
reworded

Regina, Mary I would suggest that this gets put up in the introduction paragraph because it explains the relationship of the connection between aces and pain and therefore its critical to understanding for the reader

Emily Workman
See above

Regina, Mary Again, I think that this would be better told as part of the story in the introduction so that the reader can see how these linkages are made. That way by the time I get to the aims understand the logic of the document.

Emily Workman
See above

Regina, Mary They are not 'chronic pain'

Regina, Mary You are not really testing the HOW here but rather the IF. If you were testing the how I imagine you would be examining the salience/executive control network, or the pathophysiology of the central pain amplification system. But in this aim what are you looking at is whether higher a scores have higher pain intensity and interference. That will not tell you how aces influence pain related outcomes but it will suggest that they do.

Emily Workman
Agree, reworded

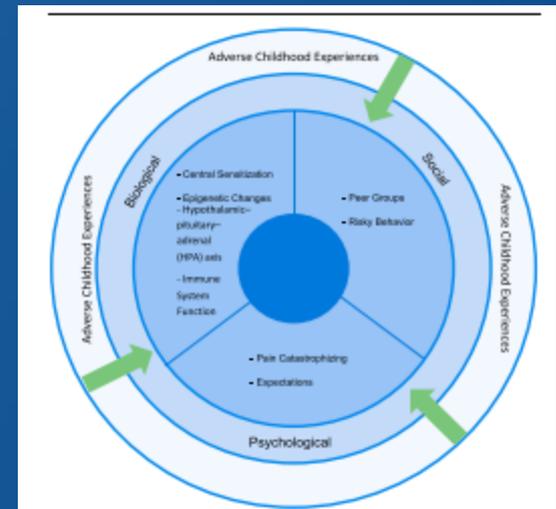
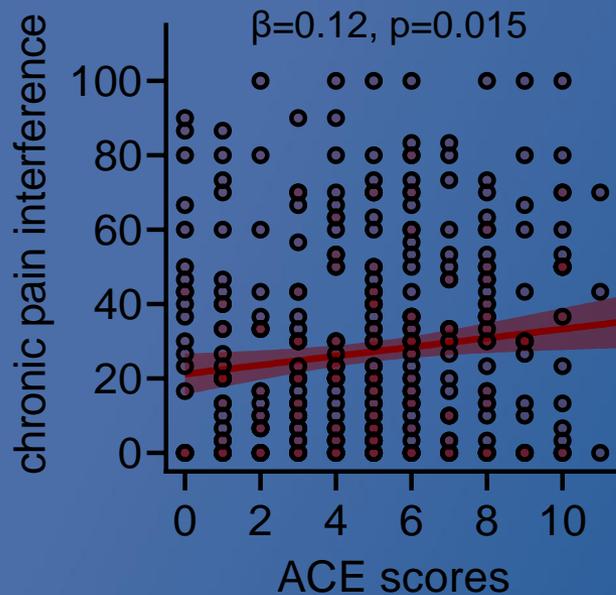


Figure 1. Biopsychosocial model allowing an exploration of the complex mechanisms by which adverse childhood experience exposure colors the experience of acute and chronic burn pain in survivors of childhood adversity.

Results

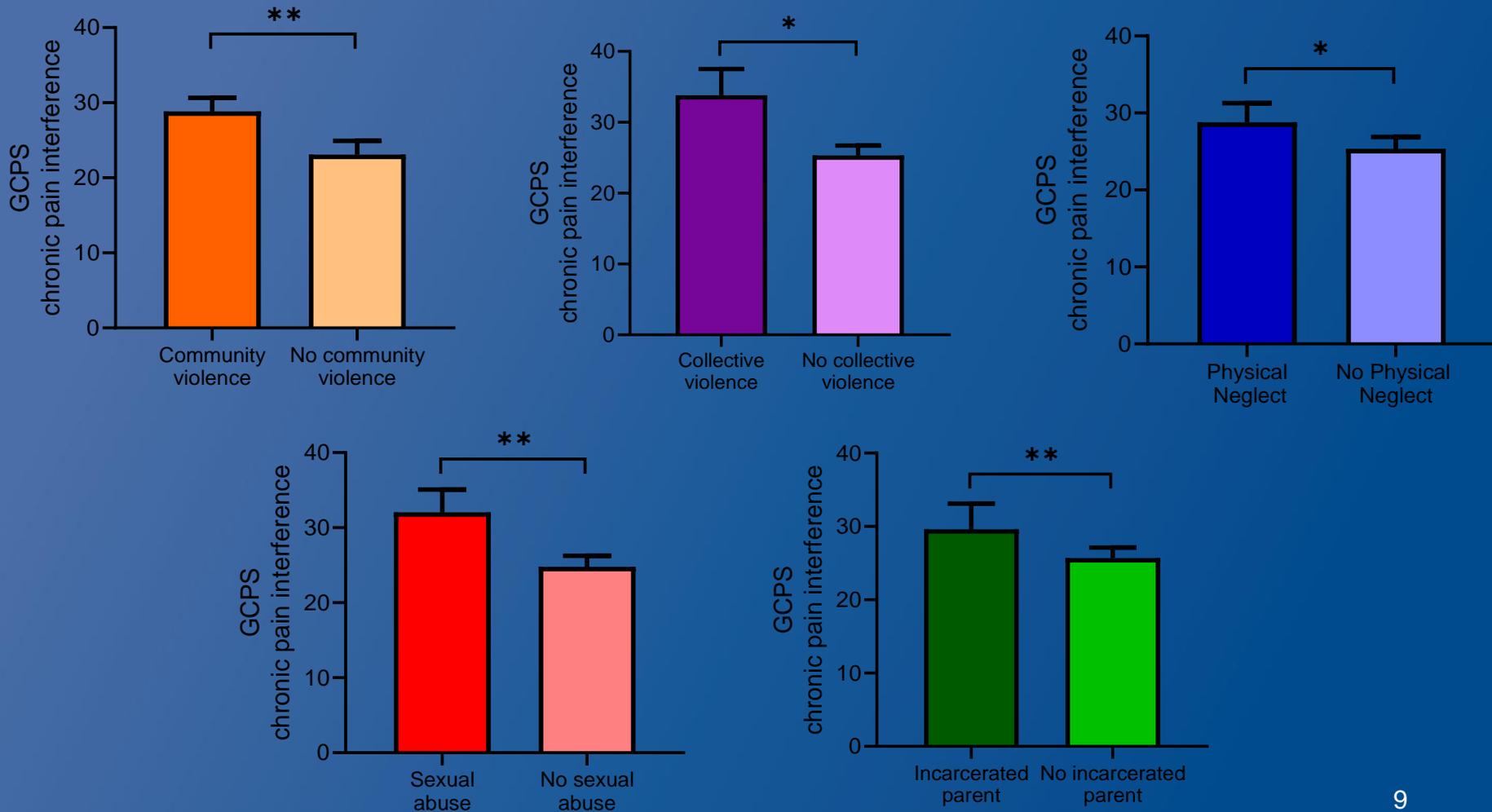
Greater ACE-IQ scores predicted higher levels of chronic pain interference ($\beta=0.12$, $p=0.015$) but was not associated with chronic pain severity ($\beta=0.04$, $p=0.427$).



The results of an ordinal regression model indicated that ACE-IQ scores significantly predicted the GCPS grade (OR=1.10, $p=0.004$), suggesting that each point increase in ACE-IQ scores was associated with about 10% increase in the levels of GCPS grade.

Participants who had been exposed to early childhood sexual abuse were 84% more likely to have higher GCPS grade (OR=1.84, $p=0.008$). Moreover, physical neglect contributed to higher odds of more severe GCPS grade (OR=1.73, $p=0.012$).

Results, continued



Dissemination

- Writing partners
- Accountability groups
- Journal selection
- Coauthors
- Edits to manuscript
- Timeline



OPEN

PAIN
REPORTS

Adverse childhood experiences and burn pain: a review of biopsychosocial mechanisms that may influence healing

Emily H. Werthman^{a,b}, Luana Colloca^{a,c,d,*}, Lynn M. Oswald^a

Abstract

Adverse childhood experiences (ACEs) affect over half of the adults in the United States and are known to contribute to the development of a wide variety of negative health and behavioral outcomes. The consequences of ACE exposure have been studied in patient populations that include individuals with gynecologic, orthopedic, metabolic, autoimmune, cardiovascular, and gastrointestinal conditions among others. Findings indicate that ACEs not only increase risks for chronic pain but also influence emotional responses to pain in many of these individuals. A growing body of research suggests that these effects may be the result of long-lasting changes induced by ACEs in neurobiological systems during early development. However, one area that is still largely unexplored concerns the effects of ACEs on burn patients, who account for almost 450,000 hospitalizations in the United States annually. Patients with severe burns frequently suffer from persistent pain that affects their well-being long after the acute injury, but considerable variability has been observed in the experience of pain across individuals. A literature search was conducted in CINAHL and PubMed to evaluate the possibility that previously documented ACE-induced changes in biological, psychological, and social processes might contribute to these differences. Findings suggest that better understanding of the role that ACEs play in burn outcomes could lead to improved treatment strategies, but further empirical research is needed to identify the predictors and mechanisms that dictate individual differences in pain outcomes in patients with ACE exposure and to clarify the role that ACE-related alterations play in early healing and recovery from burn injuries.

Keywords: Expectancies, Early life, Stress, Symptom management, Coping

1. Introduction

Adverse childhood experiences (ACEs) affect over half of the adults in the United States and are known to contribute to the development of a wide variety of negative health and behavioral

outcomes.⁴³ Originally defined by Felitti et al.,²³ these experiences include traumatic events such as physical, mental, and sexual abuse as well as neglect, divorce or separation, family incarceration, and violence, mental illness, or substance abuse in home. There is emerging evidence that one of the most intractable negative health outcomes associated with ACEs is chronic pain. Adverse childhood experiences have been shown to contribute to risks for chronic pain in both children and adults^{72,87} and are associated with increased severity of pain in medical conditions such as arthritis, back pain, and headaches.⁹⁰ In recent years, there has been growing interest in studying the biological mechanisms that may underlie these associations. Findings of several lines of research have provided evidence that individual differences in pain responses and risks for chronic pain may be the result of ACE-induced alterations in the developing brain and in key neurobiological substrates, such as the hypothalamic-pituitary-adrenal (HPA) axis, and autonomic and immune systems.^{7,21,86,110} Burn patients account for almost 450,000 hospitalizations in the United States annually.² Anecdotal evidence suggests that up to 40% of the adult burn population has had ACE exposure.²² Yet, despite evidence that ACE exposure worsens pain outcomes in patients with other kinds of pain, only one published study has specifically explored the relationship between ACEs

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Other projects

- Continue collecting stories:
 - Nurse driven fluid resuscitation
 - Sleep hygiene
 - Time to presentation of burn injuries during COVID

Questions

Thank you!

Please feel free to reach out with questions:

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