Posttraumatic stress symptoms mediate the transition from acute to persistent pain among women sexual assault survivors

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INTRODUCTION

- Approximately 100,000 women annually present for emergency care after sexual assault in the United States (US).[1]
- In addition to the known negative mental health consequences, many survivors report clinically significant new or worsening pain after sexual assault.[2,3]
- Severe physical injury is rare, and persistent pain can be present in body regions without physical trauma.[3]
- To date, little is known about the etiology of persistent pain in this population.

METHODS

- Data is based on the Women's Health Study (WHS), a large-scale observational cohort study of women presenting to emergency care following sexual assault.
- Women sexual assault survivors ≥18 years of age presenting for emergency care were recruited for the study at one of the twelve participating sites across the US from 2015-2019.
- Survivors provide consent for access to detailed forensic records regarding the assault characteristics. These records provide information including consciousness at the time of the assault, physical trauma, and any medical services provided to the patient.
- Following intake, participants provided full written consent for the study one-week post-assault, then completed sequnetial follow-up surveys at one week and six weeks.
- Follow-up evaluations of enrolled participants include an assessment of posttraumatic stress (PTS, PCL-S) and somatic (0-10 numeric rating scale) symptoms. History of traumatic life events used a 10-item ACE Score, a self-report measure used to identify childhood experiences of abuse and neglect. Lifetime trauma exposure was assessed with a 15-item self-report measure of various lifetime traumas.
- Clinically significant new or worsening pain (CSNWP) is defined as increased pain from pre-assault to post-assault by > 2 points on the pain numeric rating scale.[4]
- Posttraumatic stress symptoms (PTSS) are clinically significant symptoms defined as > 33 on the Posttraumatic Stress Disorder Checklist (PCL).[5]
- The current study used structural equation modeling to examine whether early posttraumatic stress symptoms, particularly alterations in arousal and reactivity, mediate the transition from acute to persistent pain six weeks after sexual assault among a large sample of women presenting for emergency care after sexual assault.

METHODS

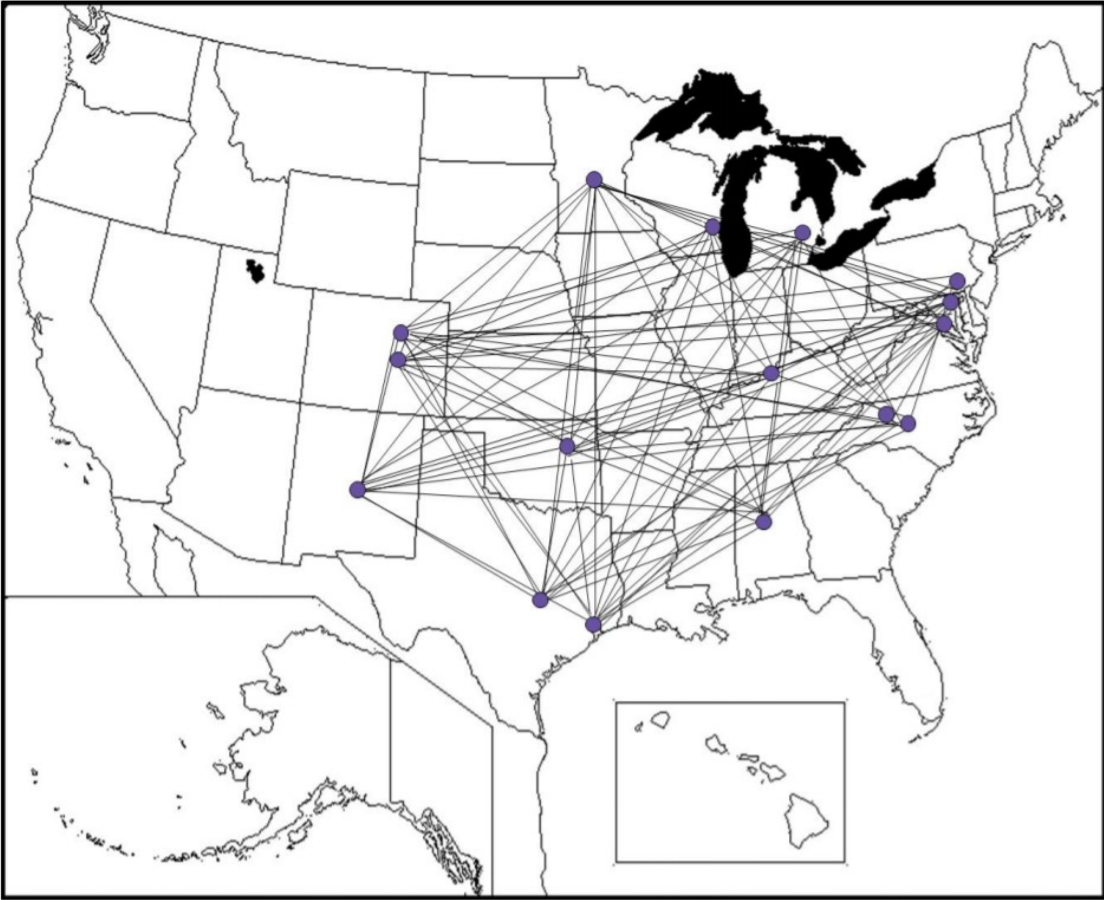


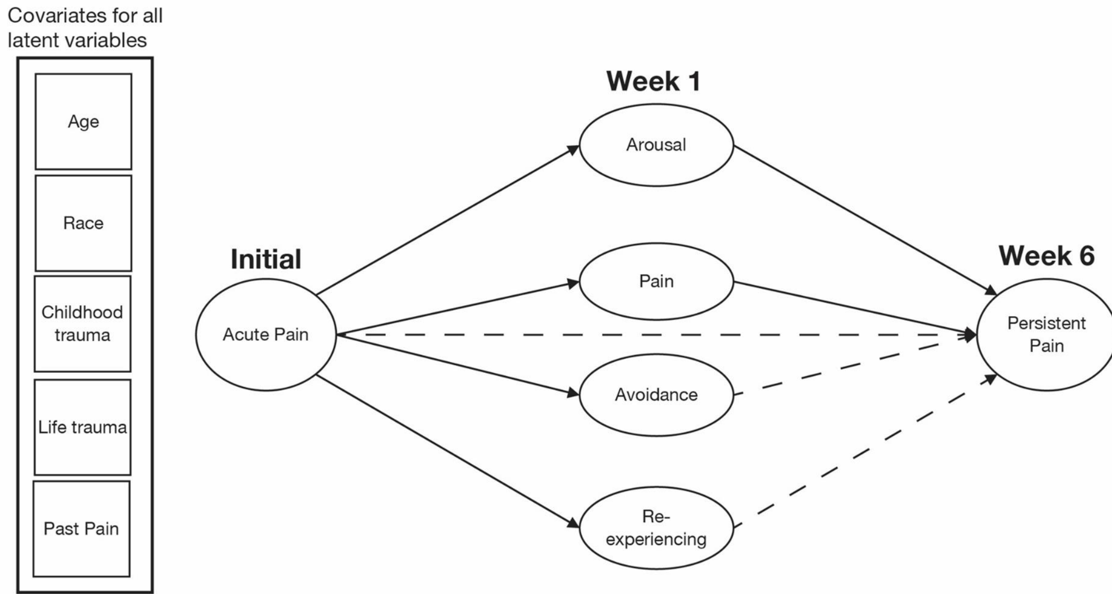
Figure 1. Better Tomorrow Network

Table 1.
Survivor demographic and clinical characteristics (N = 706).

	n (%)
Age (*M [SD]*)	28.4 (9.7)
Race	
White	397 (57.3%)
Black	104 (15.0%)
Asian	13 (1.9%)
Native American	76 (11.0%)
Other	103 (14.9%)
Ethnicity	
Hispanic	181 (26.3%)
Education	
Less than high school	56 (8.0%)
High school or equivalent	172 (24.6%)
Post-high school training not college/some college	330 (47.1%)
4-year degree	113 (16.1%)
Graduate or professional degree	29 (4.1%)
Annual Income	
<$20,000	254 (38.9%)
$20,000-39,999	156 (23.9%)
$40,000-79,999	159 (24.4%)
$80,000+	83 (12.7%)
Work Status	
Student	152 (22.0%)
Not currently working	192 (27.7%)
Part-time	84 (12.1%)
Full-time	264 (38.2%)
CSNWP	
Initial	475 (69.1%)
One week	433 (63.8%)
Six week	248 (40.6%)
One week PTSS	543 (81.0%)

RESULTS

Figure 2. Path diagram representing mediation model of posttraumatic stress symptoms mediating the transition from acute to persistent pain among women experiencing sexual assault.



- 706 women were enrolled in the study and completed the one-week assessment. 630/706 (89.2%) completed the six-week follow-up.
- 433/706 (63.8%) of women sexual assault survivors reported CSNWP at the one-week assessment, and 248/706 (40.6%) at the six-week assessment.
- 543/706 (81%) had significant acute PTSS at the one-week assessment
- Means for overall pain intensity were 5.26 (SD = 2.83) for the initial visit, 4.50 (SD = 2.80) for the one week, and 3.12 (SD = 2.86) for the six week.
- Joint measurement confirmatory factor analyses (CFAs) were conducted to examine the best fitting structure of PTSS and pain.
- Age, race, childhood trauma, and lifetime trauma history did not significantly predict six-week pain ($p > .109$).
- Alterations in arousal and reactivity symptoms ($B = .85$, $SE = .35$, $p = .014$) and one-week pain ($B = .46$, $SE = .06$, $p < .001$) significantly predicted six-week pain.
- One-week pain ($B = .27$, $p < .001$) was a significant mediator of the transition from acute to chronic pain

CONCLUSIONS

- Findings suggest posttraumatic stress symptoms (PTSS), particularly alterations in arousal and reactivity, mediate the transition from acute to persistent pain among women sexual assault survivors.
- PTSS may promote continued activation of the HPA axis and stress response, and exacerbate or maintain pain outcomes.
- Interventions targeting PTSS could prevent the transition of persistent or chronic pain among women experiencing sexual assault.
- Future research should integrate these neurobiological assessments of stress system activation to better understand the potential pathways from PTSS to persistent pain.

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