

Introduction

- 1 in 5 women are sexual assaulted (SA)¹.
- Posttraumatic stress (PTS) and pain are common in the early aftermath of SA. Evidence indicates that these immediate post-SA outcomes are driven by changes to neuro/stress/immune systems, but specific mechanisms remain poorly understood. Identifying epidemiologic factors associated with variation in acute PTS and pain severity may provide clues to pathogenesis.
- Adverse childhood experiences (ACEs) can affect responses to stress exposures during adulthood;² the influence of ACEs on acute pain and psychological responses following sexual assault have not been assessed.
- We evaluated associations between adverse childhood experiences and acute pain and PTS outcomes among adult women presenting for care in the early aftermath of sexual assault.

Methods

- Adult women SA survivors >=18 years of age presenting to a *Better Tomorrow Network* emergency care site (Figure 4) after SA were approached for study participation.
- Initial consent at the time of emergency care included permission to perform a brief assessment, obtain medical and Sexual Assault Nurse Examiner (SANE) records, and contact the survivor in 48-72 hours to assess their interest in further study participation.
- Women SA survivors interested in further study participation completed follow-up evaluations including a 1 week assessment.
- Pain severity (0-10 NRS) was assessed at the time of emergency care and at 1 week. PTS symptoms (using the PCL-5) were assessed at 1 week. Adverse childhood experiences were evaluated using the ACEs questionnaire.
- Cohort sociodemographic characteristics were summarized using descriptive statistics. Linear regression analysis was used to evaluate the number of reported adverse childhood experiences and pain and PTS symptoms in the early aftermath of SA controlling for age, income and education level.

Table 1. Sexual Assault Survivor Characteristics (n=701)

Age, mean (SD)	28 (9.8)
Highest level of education completed, n (%)	
Less than high school	48 (7)
High school or some college	496 (73)
College graduate or beyond	140 (20)
Income, n (%)	
Less than \$40,000	403 (63)
\$40,000-\$100,000	188 (29)
\$100,000 or higher	52 (8)
Ethnicity, n (%)	
Hispanic or Latino	179 (26)
Not Hispanic or Latino	499 (74)
Moderate / Severe Pain, n (%)	
Initial	494 (71)
1-Week	416 (61)

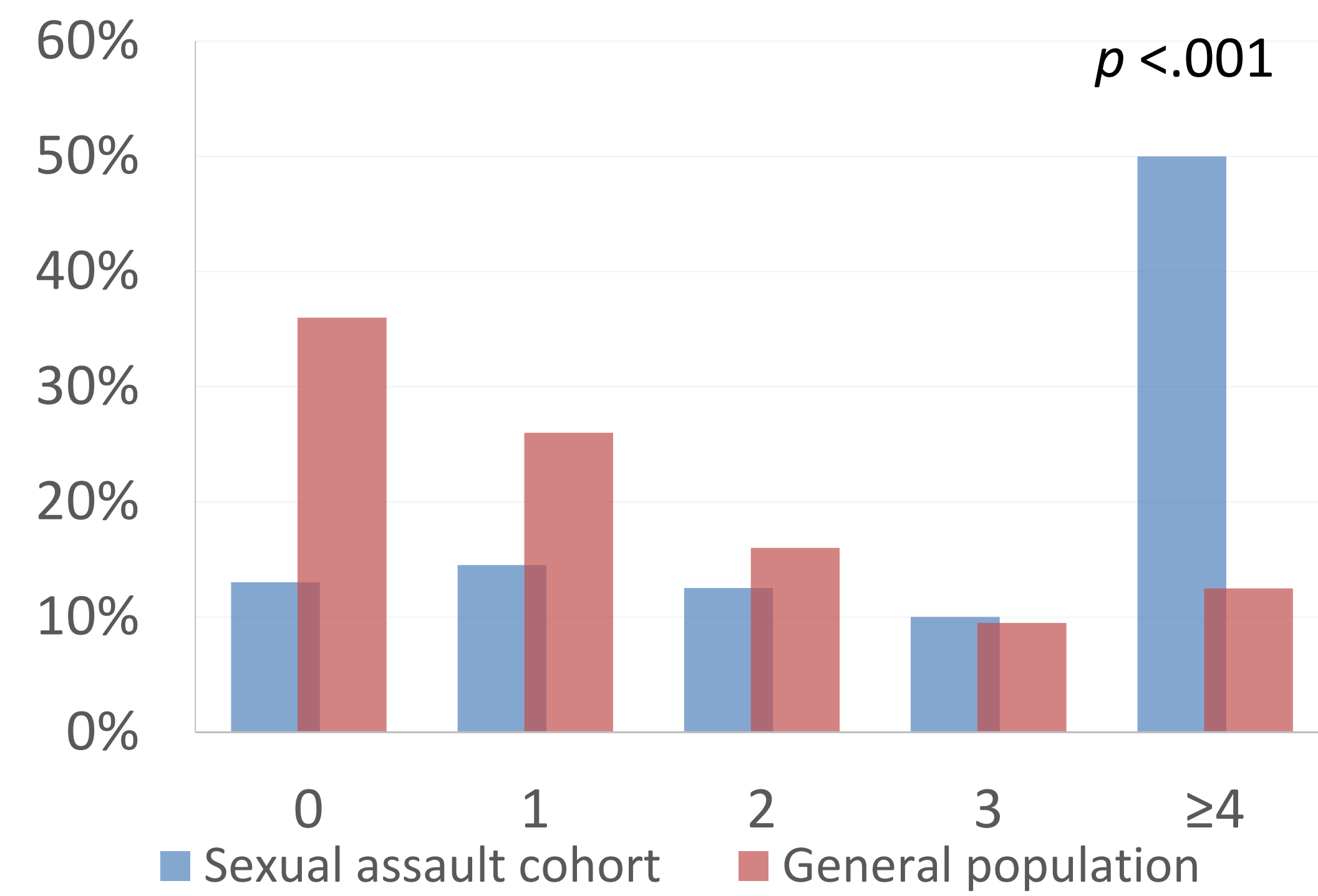


Figure 1. Number of adverse childhood experiences (ACEs) reported by study participants vs. the general population²

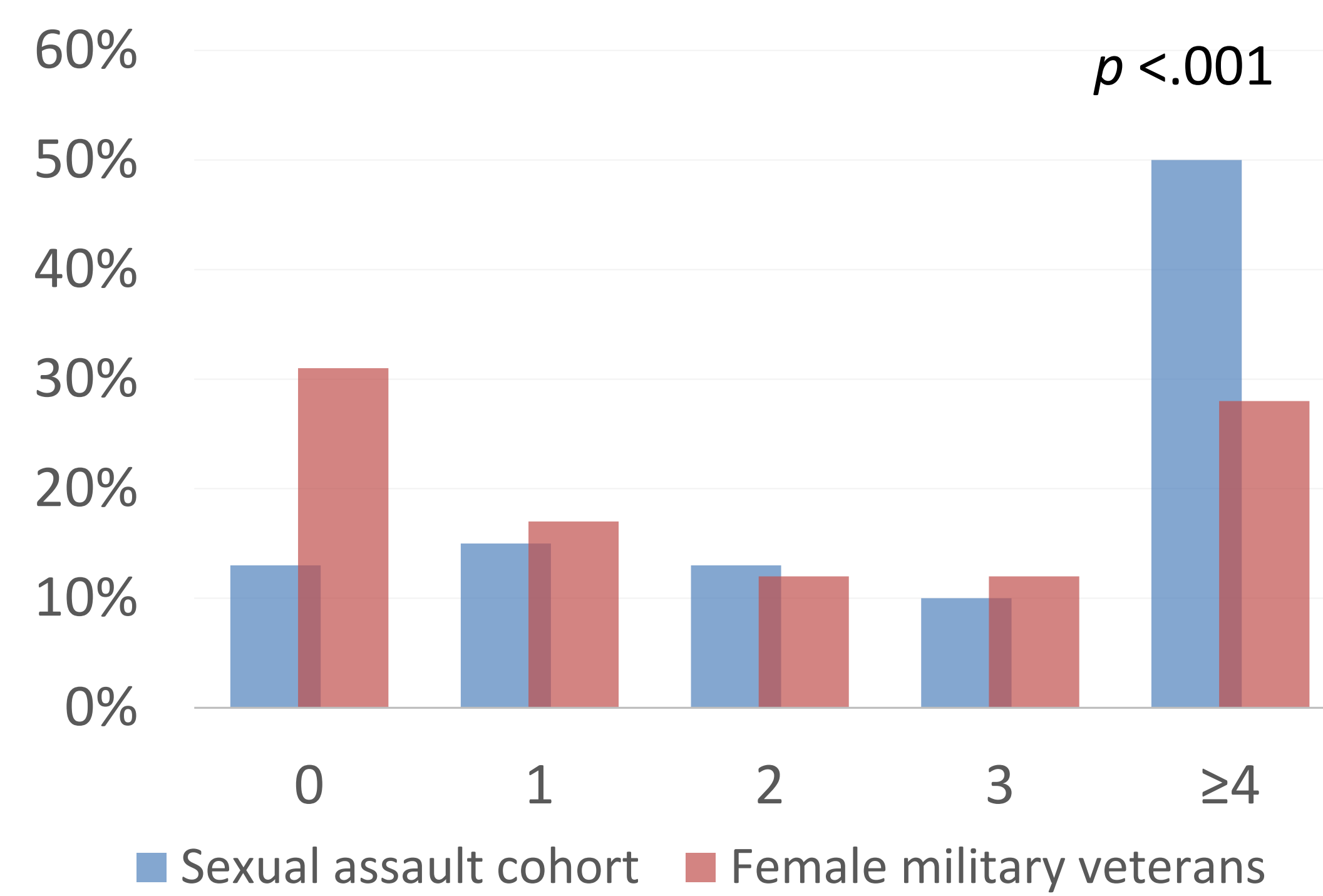


Figure 2. Number of adverse childhood experiences (ACEs) reported by study participants vs. female military veterans³

Table 2. Types of adverse childhood experiences (ACEs) reported by study participants

Category	Proportion
Abuse	
Physical	49%
Emotional	35%
Sexual	39%
Neglect	
Physical	48%
Emotional	19%
Household Challenges	
Parental separation or divorce	59%
Mother treated violently	25%
Substance abuse	44%
Mental illness	46%
Incarcerated household member	20%

"Some of us have been the target of abuse since childhood and are still feeling the impact of it in our adult lives. I may never be completely whole again."

"It all started when I was 5 years old. Four or five and has happened to me occurring my whole life. I have been beat, molested, raped, sold, abducted..."

"Having also been assaulted when I was younger I noticed that at 32 the physical aftermath was much more intense."

Figure 3. Participant comments related to childhood abuse and trauma

Table 3. Relationship between number of reported adverse childhood experiences (ACEs) and pain and posttraumatic stress severity at the time of presentation for emergency care and one week after assault

Outcome	Correlations		Adjusted Associations*	
	r	p-value	β	p-value
Pain severity at the time of emergency care	0.15	<0.001	0.08	0.042
Pain severity 1 week after SA	0.17	<0.001	0.11	<0.001
Posttraumatic stress severity 1 week after SA	0.22	<0.001	1.35	<0.001
Re-experiencing symptoms	0.20	<0.001	0.06	<0.001
Avoidance symptoms	0.17	<0.001	0.07	<0.001
Numbing symptoms	0.20	<0.001	0.11	<0.001
Hyperarousal symptoms	0.19	<0.001	0.08	<0.001

*Adjusted for age, education and income

Results

- Most SA Survivors (n = 701) were <30 years of age, had not completed college, and had income <\$40,000 per year (Table 1).
- Reported adverse childhood experiences among SA survivors were very high (mean = 3.87; SD = 2.87) and greater than general (Figure 1) or military female (Figure 2) populations.
- A greater number of adverse childhood experiences was associated with more severe pain and posttraumatic stress symptoms in the early aftermath of sexual assault. These associations persisted after adjustment for sexual assault survivor age, education, and income (Table 3).

Conclusions

- In this large sample of adult women sexual assault survivors evaluated at emergency treatment centers across the US, increased reported adverse childhood experiences were associated with more severe pain and posttraumatic stress symptoms in the early aftermath of assault.
- Future studies will evaluate potential molecular mediators of these associations, including epigenetic signatures and differences in coding and non-coding RNA expression associated with differences in previous life histories.

References

1. Breiding MJ, Srahon GS, Basile KC, Walters ML, Chen J, Merrick MT. Prevalence and characteristics of sexual violence, stalking, and intimate partner violence victimization. *Surveillance Summaries* 63(SS08):1-18, 2014.
2. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults. Felitti, Vincent J et al. *American Journal of Preventive Medicine*, Volume 14, Issue 4, 245 – 258.
3. Blossnich JR, Dichter ME, Cerulli C, Batten SV, Bossarte RM. Disparities in Adverse Childhood Experiences Among Individuals With a History of Military Service. *JAMA Psychiatry*. 2014;71(9):1041–1048.

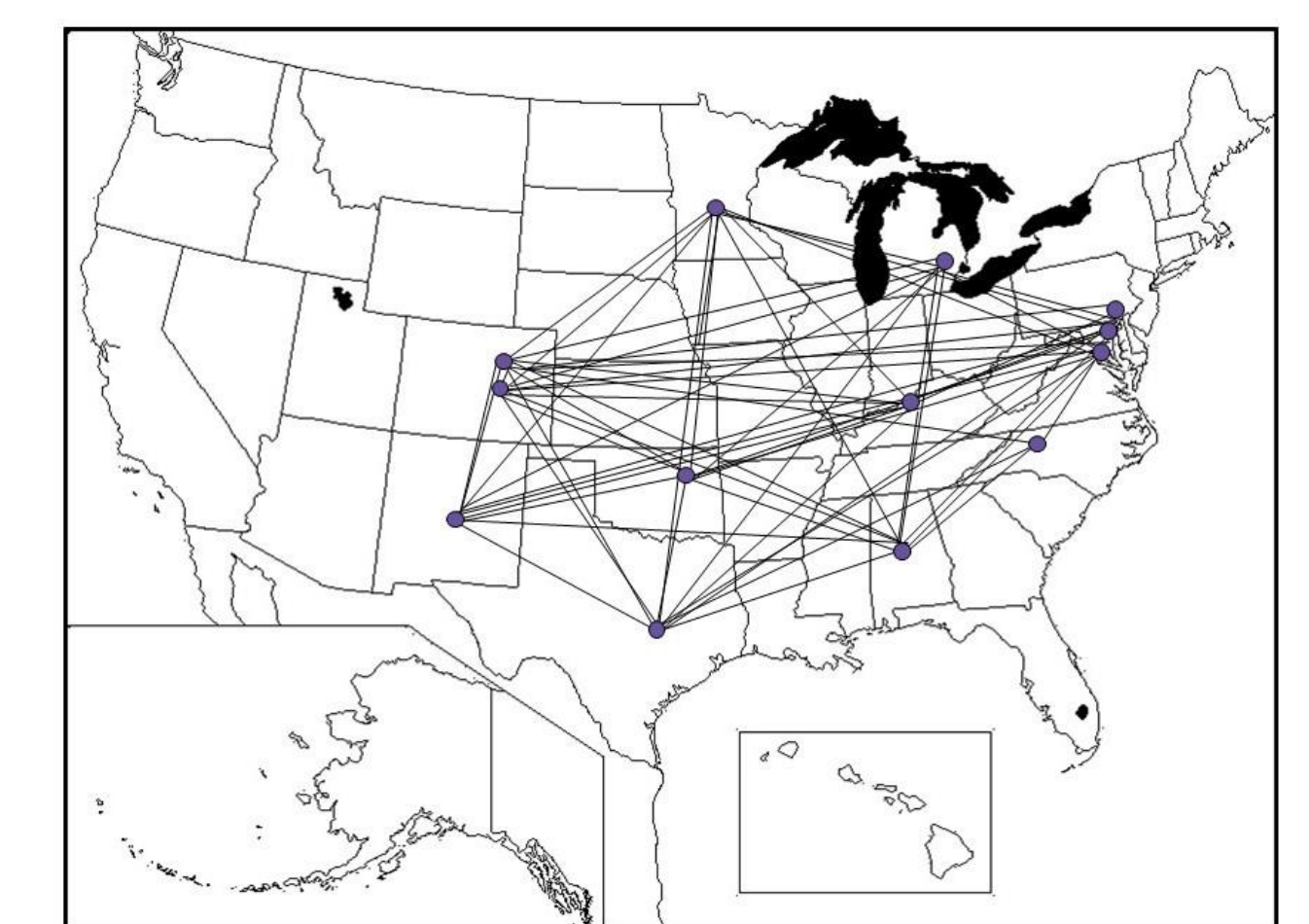


Figure 4. Better Tomorrow Network sites

Funding

Research reported in this presentation was supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institutes of Health under Award Number R01 AR064700.

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