ADVERSE CHILDHOOD EXPERIENCES AND OUTCOMES FOLLOWING INTERDISCIPLINARY PAIN REHABILITATION: A RETROSPECTIVE COHORT STUDY

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INTRODUCTION

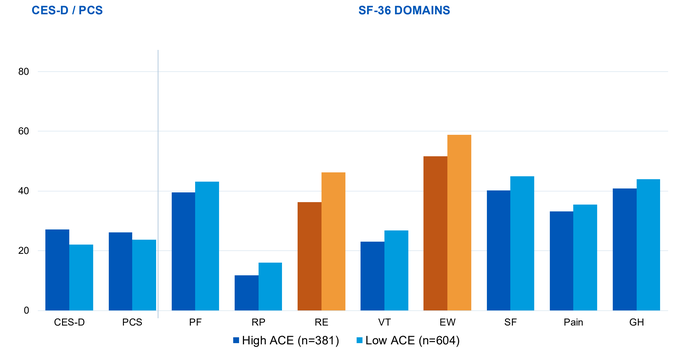
- Chronic pain is influenced by biological, psychological, and social factors, including adverse childhood experiences (ACEs).
- Higher ACE exposure has been associated with greater psychological distress and poorer functioning among individuals with chronic pain.
- The impact of ACE burden on outcomes following interdisciplinary pain rehabilitation remains unclear.

MATERIALS AND METHODS

DESIGN & COHORT	Retrospective cohort of 985 adults with chronic pain who completed the program
SETTING & PROGRAM	Two-week interdisciplinary Pain Rehabilitation Center program at Mayo Clinic Florida, January 2022 to February 2025
ACE GROUPS	Participants grouped by adverse childhood experiences (ACE): high ≥3 and low ≤2
OUTCOMES	Depressive symptoms (CES-D), pain catastrophizing (PCS), and health-related quality of life (SF-36) assessed at admission and discharge
MEANINGFUL CHANGE	Clinically meaningful improvement defined using established minimal clinically important difference (MCID) thresholds: CES-D ≥9, PCS ≥3.2, SF-36 ≥5
ANALYSIS	Multivariable regression evaluated associations. Mediation analyses examined potential underlying mechanisms

RESULTS

BASELINE OUTCOMES AT ADMISSION (N = 985)



- **Both groups improved.** Mean change from admission to discharge met or exceeded MCID thresholds on every outcome.
- **Clinically meaningful response.** High ACE status was independently associated with higher odds of clinically meaningful improvement in depression (OR 1.82, 95% CI 1.39–2.39, p<0.001).
- **Higher improvement.** Greater reductions in depressive symptoms (−13.4 vs −10.7, p<0.001) and pain catastrophizing (−11.5 vs −9.7, p=0.02), plus greater gains in physical functioning (p=0.006).

Higher improvement

Outcome	High ACE change	Low ACE change	Difference in change	P value
Depression (CES-D)	−13.4	−10.7	−2.7	<.001
Pain Catastrophizing (PCS)	−11.5	−9.7	−1.8	0.02
Physical Function	26.0	22.5	3.5	0.006
Emotional Well-being	21.6	17.8	3.8	0.003
General Health	17.2	14.5	2.7	0.02

Mean change, admission to discharge. Both groups met MCID for all outcomes shown.

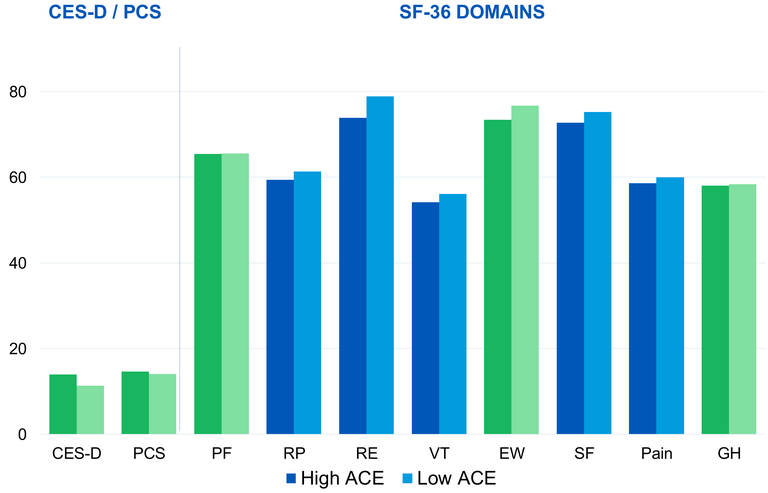
- **Higher baseline burden.** Of 985 participants, the high-ACE group (n=381) entered treatment with significantly worse psychological and functional scores than the low-ACE group (n=604) across all measures.

SF-36 emotional outcomes at admission

SF-36 domain	High ACE (n = 381)	Low ACE (n = 604)	Mean difference	P value	MCID
Role Limitations–Emotional	36.2 (41.6)	46.3 (43.5)	−10	<.001	5
Emotional Well-being	51.7 (21.9)	58.8 (21.7)	−7	<.001	5

Values are mean (SD). Lower SF-36 scores indicate worse outcomes.

DISCHARGE OUTCOMES (N = 985)



DISCUSSION

- Patients with greater childhood adversity entered treatment with more severe psychological and functional impairment but achieved comparable or superior outcomes after interdisciplinary pain rehabilitation.
- Trauma exposure should not be viewed as a barrier to rehabilitation success; high-ACE patients were more likely to reach clinically meaningful improvement in depression.
- Reductions in pain catastrophizing partially explained gains in depressive symptoms, pointing to a potential mechanism of change.
- Structured biopsychosocial programs may be particularly beneficial for trauma-exposed individuals, and trauma-informed approaches may further optimize outcomes in chronic pain care.

BOTTOM LINE

High ACE group improved in 5 Categories

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