

Gender Differences in Adverse Childhood Experiences and Alcohol and Drug Use Among an Urban Emergency Department Sample

INTRODUCTION

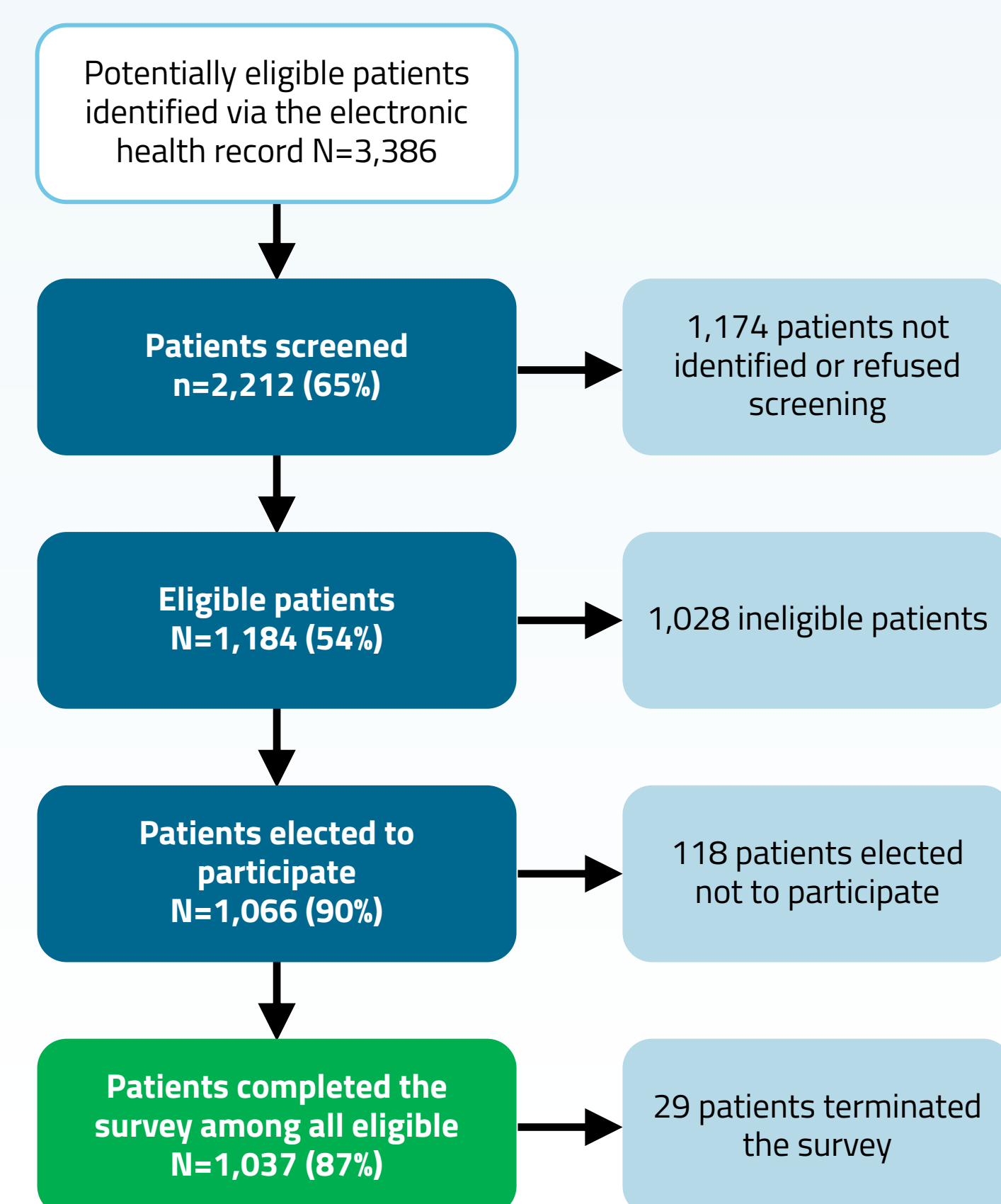
Past research has shown that those exposed to adverse childhood experiences (ACE) are more likely to have numerous health and behavioral problems in adulthood, including substance use.^{1,2} Few studies have examined the prevalence of ACE in diverse, low socioeconomic status (SES) populations in which the impact of poverty may exacerbate disparities in health outcomes.³ Moreover, previous research indicates that the association between ACE and adult substance use may differ by gender.⁴ The goal of this study was to analyze gender differences in prevalence of separate and cumulative ACE, and to determine their association with alcohol and drug use among a sample of urban Emergency Department (ED) patients.



METHODS

Trained, bilingual research assistants recruited non-emergent patients to the study at the ED of a Northern California safety-net public hospital. Eligibility criteria included: ages 18-50; English or Spanish speaker; and married, cohabiting, or in a romantic relationship for the past 12 months. Cross-sectional survey data were obtained via confidential, face-to-face interviews (n=1037; 53% female). The recruitment sequence is shown in Figure 1.

Figure 1. Study sample recruitment



Measurements

Adverse Childhood Experiences: Modified ACE scale.⁵

Substance Use: At-risk drinking (4+/5+ for females/males); Marijuana use; Illicit drug use

Spouse/Partner Substance Use: Problem drinking (AUDIT-C),⁶ Marijuana use; Illicit drug use.

Psychosocial Factors: Impulsivity;⁷ Stressful life events.⁸

Analysis

- Chi square tests of independence with Bonferroni correction ($p < 0.001$).
- Gender-stratified logistic regression models for at-risk drinking, marijuana use, and illicit drug use, adjust for race/ethnicity, age, psychosocial factors, and spouse/partner's substance use.

RESULTS

Approximately 53% of males and 60% of females reported at least 1 ACE (Table 1). A greater proportion of women than men reported growing up with a depressed or mentally ill household member (29.2% vs. 18.2%) and experienced sexual abuse (20.4% vs. 6.6%) (Table 2). Women who grew up with a depressed or mentally ill household member had higher rates of at-risk drinking, marijuana, and illicit drug use compared to women without this ACE. Men with this ACE had higher rates of marijuana use compared to men without this ACE. Women who reported that their mother was a victim of domestic violence had higher rates of illicit drug use than women without this ACE. In fully adjusted models, males' cumulative ACE weren't associated with substance use (Table 3). Among females, associations between cumulative ACE and marijuana use (Odds Ratio [OR]=2.26, 95% Confidence Interval [CI] 1.06, 4.83) and illicit drug use (OR=3.35; 95% CI 1.21, 9.30) were attenuated but remained significant (Table 4). In all models, patients whose spouse/partners are problem drinkers or use marijuana or illicit drugs were at increased risk for each outcome. Stressful life events and impulsivity were differentially associated with substance use outcomes among men and women.

Table 1. Sample Characteristics

	Males (n=484)	Females (n=550)
Age (Mean, SD)	36.5 (8.2)	34.0 (8.5)
Race/ethnicity		
Black	26.2	31.3
Hispanic	52.9	47.6
Other	14.5	14.5
White	6.4	6.5
Adverse childhood experiences		
0	47.1	40.3
1	22.5	20.3
2	14.7	15.5
3+	15.7	23.9
Stressful life events (Mean, SD)	3.7 (2.8)	3.3 (2.7)
Impulsivity (Mean, SD)	5.3 (2.5)	5.4 (2.6)
At-risk drinking		
Yes	34.3	20.4
No	65.7	79.6
Marijuana use		
Yes	30.5	23.9
No	69.5	76.1
Illicit drug use		
Yes	17.0	8.1
No	83.0	91.9
Spouse/Partner problem drinking		
Yes	19.4	22.5
No	80.6	77.5
Spouse/Partner marijuana use		
Yes	18.0	26.2
No	82.0	73.8
Spouse/Partner illicit drug use		
Yes	4.6	6.9
No	95.4	93.1

Table 3. Risk for substance use among males

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
At-risk drinking:			
No. of ACE: (ref: none)			
1	1.23 (0.76, 2.00)	1.06 (0.64, 1.76)	1.01 (0.61, 1.69)
2	1.07 (0.60, 1.89)	0.83 (0.45, 1.52)	0.85 (0.46, 1.57)
3+	1.14 (0.65, 2.02)	0.75 (0.40, 1.42)	0.73 (0.38, 1.40)
Impulsivity		1.12 (1.03, 1.22)**	1.10 (1.01, 1.20)*
Stressful life events		1.07 (0.98, 1.15)	1.03 (0.95, 1.12)
Partner AUDIT-C			2.61 (1.56, 4.37)***
Marijuana use:			
No. of ACE: (ref: none)			
1	1.24 (0.69, 2.23)	1.07 (0.58, 1.97)	0.84 (0.42, 1.69)
2	1.40 (0.71, 2.77)	0.86 (0.41, 1.81)	0.80 (0.36, 1.79)
3+	3.35 (1.76, 6.39)***	1.85 (0.91, 3.78)	1.40 (0.65, 3.03)
Impulsivity		1.07 (0.98, 1.18)	1.01 (0.91, 1.12)
Stressful life events		1.18 (1.08, 1.29)***	1.16 (1.05, 1.28)**
Partner marijuana use			8.99 (4.62, 17.50)***
Any illicit drug use:			
No. of ACE: (ref: none)			
1	1.52 (0.77, 3.00)	1.14 (0.56, 2.32)	1.03 (0.48, 2.20)
2	2.34 (1.14, 4.77)*	1.25 (0.57, 2.73)	1.20 (0.51, 2.80)
3+	3.62 (1.85, 7.10)***	1.52 (0.70, 3.27)	1.71 (0.77, 3.82)
Impulsivity		1.20 (1.08, 1.32)**	1.19 (1.07, 1.33)**
Stressful life events		1.21 (1.10, 1.33)***	1.19 (1.07, 1.32)**
Partner illicit drug use			19.01 (5.47, 66.01)***

All models are adjusted for race/ethnicity and age. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2. Bivariate analyses of substance use by adverse childhood experience exposure

	At-risk drinking %		Chi-square (1 df)	Marijuana use %		Chi-square (1 df)	Any illicit drug use %		Chi-square (1 df)
	No	Yes		No	Yes		No	Yes	
Adverse childhood experience (%)									
Depressed/ mentally ill household member*									
Men (18.2%)	18.6	17.6	0.07	13.1	29.7	18.37*	16.3	28.4	6.57
Women (29.2%)	25.1	45.0	17.03*	24.0	46.5	23.47*	26.6	59.1	20.60*
Problem drinker in household									
Men (38.7%)	37.7	40.6	0.40	35.2	46.5	5.40	35.5	55.6	11.37
Women (40.6%)	38.0	50.9	6.12	38.3	48.1	3.88	38.4	63.6	10.66
Psychological/emotional abuse									
Men (16.6%)	17.0	16.0	0.08	14.6	21.1	3.07	15.3	23.2	2.98
Women (21.5%)	19.8	27.9	3.44	18.5	30.5	8.26	20.0	38.6	8.35
Physical abuse									
Men (15.2%)	13.8	17.9	1.37	12.6	21.5	6.10	12.9	26.8	10.22
Women (14.9%)	14.3	17.1	0.56	13.8	18.4	1.60	14.1	23.3	2.64
Mother victim of domestic violence									
Men (18.8%)	19.9	16.6	0.79	17.3	21.1	0.94	16.6	29.3	7.07
Women (22.7%)	19.5	34.8	11.87	19.3	32.8	10.0	20.7	45.5	14.12*
Sexual abuse*									
Men (6.6%)	5.2	9.3	2.88	5.9	7.7	0.55	5.4	12.3	5.22
Women (20.4%)	20.9	18.9	0.20	18.5	25.8	3.14	19.8	27.3	1.39

#Significant gender difference in exposure to this ACE ($p < 0.001$)
*Significant chi-square with Bonferroni correction ($p < 0.001$)

Table 4. Risk for substance use among females

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
At-risk drinking:			
No. of ACE: (ref: none)			
1	2.00 (1.09, 3.67)*	1.65 (0.89, 3.07)	1.34 (0.70, 2.57)
2	2.18 (1.15, 4.14)*	1.93 (1.01, 3.70)*	1.70 (0.87, 3.35)
3+	2.40 (1.37, 4.21)**	1.57 (0.85, 2.91)	1.41 (0.75, 2.68)
Impulsivity		1.10 (1.01, 1.19)*	1.06 (0.97, 1.16)
Stressful life events		1.13 (1.04, 1.23)**	1.12 (1.02, 1.22)*
Partner AUDIT-C			4.23 (2.60, 6.87)***
Marijuana use:			
No. of ACE: (ref: none)			
1	2.91 (1.55, 5.47)**	2.10 (1.07, 4.11)*	1.45 (0.69, 3.04)
2	3.12 (1.61, 6.07)**	2.49 (1.25, 4.98)*	2.26 (1.06, 4.83)*
3+	3.10 (1.73, 5.58)***	1.40 (0.72, 2.72)	0.76 (0.35, 1.64)
Impulsivity		1.07 (0.98, 1.17)	1.07 (0.97, 1.18)
Stressful life events		1.31 (1.19, 1.45)***	1.30 (1.17, 1.45)***
Partner marijuana use			9.22 (5.19, 16.38)***
Any illicit drug use:			
No. of ACE: (ref: none)			
1	1.71 (0.55, 5.29)	1.44 (0.46, 4.59)	1.60 (0.47, 5.40)
2	1.94 (0.62, 6.04)	1.70 (0.53, 5.45)	1.98 (0.58, 6.84)
3+	6.06 (2.50, 14.72)***	4.22 (1.62, 10.96)**	3.35 (1.21, 9.30)*
Impulsivity		1.27 (1.13, 1.44)***	1.25 (1.09, 1.43)**
Stressful life events		1.05 (0.92, 1.19)	0.99 (0.86, 1.14)
Partner illicit drug use			11.48 (4.68, 28.17)***

All models are adjusted for race/ethnicity and age. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Limitations

(1) The cross-sectional design precludes making causal inferences regarding the study's observed associations. (2) The sample was obtained from a single Northern California urban ED, which may limit generalizability. (3) Recall bias may have affected patients' estimation of events over the previous 12 months.

CONCLUSIONS

Among a sample of ethnically diverse urban ED patients, ACE were associated with greater risk for substance use among females than males. Couple factors, such as spouse/partner substance use, should be considered by ED staff when screening patients for problem drinking and drug use.



REFERENCES:

- Campbell J, Walker R, Egede L. Associations Between Adverse Childhood Experiences, High-Risk Behaviors, and Morbidity in Adulthood. *Am J Prev Med* 2016;50(3):344-352.
- Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health*. 2017;2(8):e356-e366.
- Wade Jr R, Cronholm P, Fein J, et al. Household and community-level Adverse Childhood Experiences and adult health outcomes in a diverse urban population. *Child Abuse & Neglect*. 2016;52:135-145.
- Evans E, Grella C, Upchurch D. Gender differences in the effects of childhood adversity on alcohol, drug, and polysubstance-related disorders. *Social Psychiatry And Psychiatric Epidemiology*. 2017;52(7):901-912.
- Cabrera OA, Hoge CW, Bliese PD, Castro CA, Messer SC. Childhood adversity and combat as predictors of depression and post-traumatic stress in deployed troops. *American Journal of Preventive Medicine*. 2007;33(2):77-82.
- Bush K, Kivlahan D, McDonell M, Fihn S, Bradley K. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Arch Intern Med*. 1998;158(16):1789-1795.
- Schafer J, Caetano R, Cunradi CB. A Path Model of Risk Factors for Intimate Partner Violence Among Couples in the United States. *Journal of Interpersonal Violence*. 2004;19(2):127-142.
- Ruan WJ, Goldstein RB, Chou SP, et al. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV): Reliability of new psychiatric diagnostic modules and risk factors in a general population sample. *Drug and Alcohol Dependence*. 2008;92:27-36.

ACKNOWLEDGEMENTS:

Research reported in this poster was supported by the National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health under Award Number R01AA022990. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.