Associations between Adverse Childhood Experiences and Depression, Overweight, Health-Related Risky Behavior, and Social Behavioral Problems in Medical Students

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Abstract

Objectives: To examine the relationship between Adverse Childhood Experiences (ACEs) and depression, overweight, health-related risky behaviors, and social behavioral problems in medical students.

Method: A cross-sectional study was conducted on medical students from a university in Taichung, Taiwan. Participants completed the ACE International Questionnaire (ACE-IQ) and assessments of mental health (Beck Depression Inventory, BDI), physical health, risky behaviors (e.g., alcohol abuse, smoking), and social problems (bullying). Chi-square and t-tests were used for analysis.

Results: Among 324 respondents (50.3% males, mean age = 24.3 ± 2.3 years), 98.1% reported at least one ACE, and nearly half reported >4 ACEs. ACEs were associated with depression (p=.004), overweight (p=.044), risky sexual behaviors (p=.014), bullying (p=.013), and being bullied (p<.001).

Conclusion: ACEs during childhood are significantly associated with high-risk behaviors and poor health outcomes in adulthood.
I: 2.558-7.274, RR= 1.522, 95%, CI: 1.304-1.776).

Conclusion: ACEs during childhood have been significantly associated with high-risk behaviors and poor health outcomes in adulthood.

Background

- Lifetime prevalence of depression was 43% in Norwegian medical students.

- The prevalence of ACEs was 51% for medical students in the United States and 72% in Iraq.

- ACEs have been associated with poor health status later in life. In recent years, the prevalence of depression among medical students has remained high.

Method

This cross-sectional study involved medical students from a university in Taichung, Taiwan. Participants completed surveys covering their ACEs by ACE-IQ, mental health status by BDI, physical health conditions, engagement in risky behaviors, and involvement in social issues (refer to Figure 1).
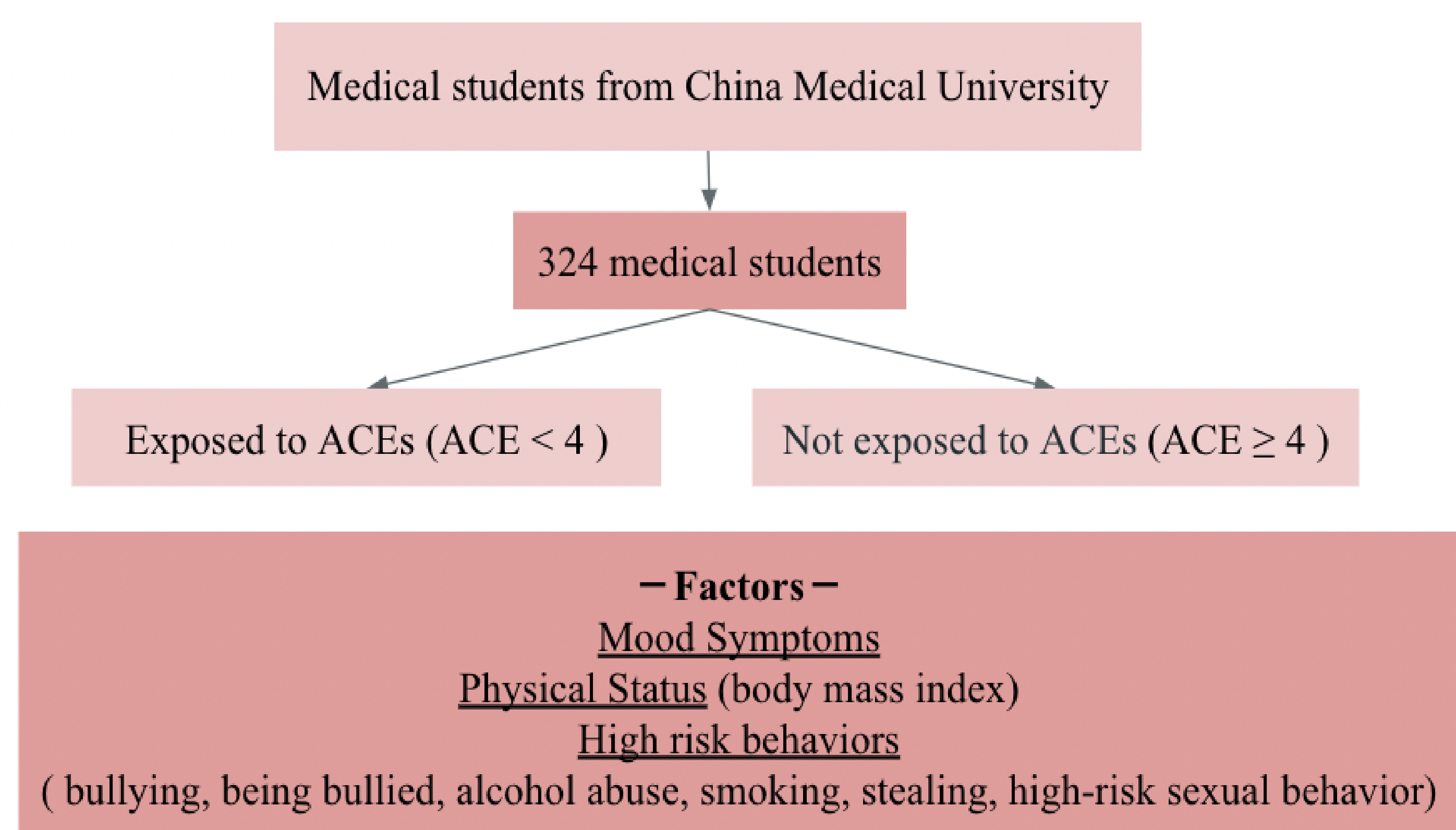
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Medical students from China Medical University
            ↓
   324 medical students
      ↓           ↓
Exposed to ACEs      Not exposed to ACEs
(ACE < 4 )           (ACE ≥ 4 )
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− Factors −
Mood Symptoms
Physical Status (body mass index)
High risk behaviors
(bullying, being bullied, alcohol abuse, smoking, stealing, high-risk sexual behavior)

Figure 1. Cross-Sectional Study Design

Results

Findings revealed that 98.1% of participants experienced at least one ACE, with nearly half reporting four or more ACEs (see Table 1). Emotional neglect was the most commonly reported ACE(see Figure 2). Significant associations were found between ACEs and conditions like depression, overweight, high-risk sexual behaviors, and both experiencing and perpetrating bullying (see Table 2).

Reference

Sciolla, A. F., Wilkes, M. S., & Griffin, E. J. (2019). Adverse Childhood Experiences in Medical Students: Implications for Wellness. Academic Psychiatry, 43(4), 369

Table 1 Demographic Data of those with ACE<4 and ≥4

Characteristic	ACE<4 (N=165)	ACE≥4 (N=159)	p-value
Age(y)			
Mean (SD)	24.22± 2.20	24.40± 2.40	0.471
range	21-35	21-35	
Gender (n, %)			0.182
Male	77(46.70)	86(54.09)	
Female	88(53.30)	73(45.91)	
Educational attainment of parents (n, %)			0.166
Doctoral degree	14(8.48)	18(11.32)	
Master's degree	45(27.27)	28(17.61)	
Bachelor's degree	84(50.91)	83(52.20)	
Senior high school graduate	18(10.91)	27(16.98)	
Junior high school graduate	4(2.42)	2(1.26)	
Primary school graduate	0(0)	1(0.63)	
Mean BMI (SD)	21.28± 2.90	22.18± 3.42	0.012
Marriage (n, %)			0.540
Married	1(0.61)	2(1.26)	
Unmarried/Single	164(99.39)	157(98.74)	
Department (n, %)			0.824
Medicine	50(30.30)	50(31.45)	
Chinese Medicine	115(69.70)	109(68.55)	

Note: ACE, adverse childhood experience; BMI, body mass index; n, number; SD, Standard deviation; y, year. This table was analyzed with t-test. Boldface indicates statistical significance (*p<0.05; **p<0.01; ***p<0.001)

Figure 2 The prevalence of ACEs among our participants
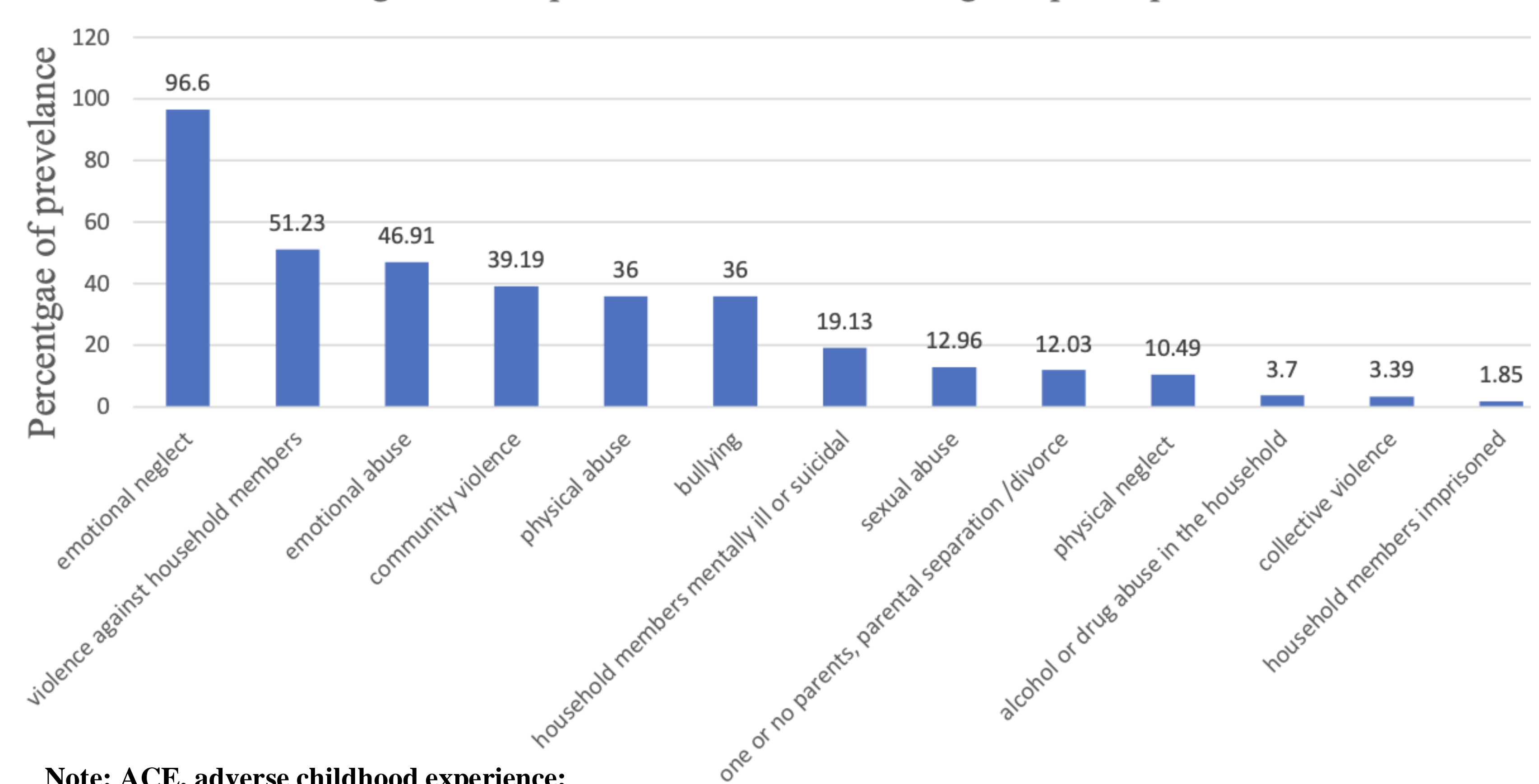
Note: ACE, adverse childhood experience;

Table 2 Association between ACEs and mental health, physical health, high-risk behaviors, and social problem

		ACE<4	ACE≥4	p-value	Odds ratio (Confidence intervals)	Relative risk (Confidence intervals)
Mental health						
Depressive symptoms	No	139	113	0.004**	2.176 (1.267-3.739)	1.185 (1.052-1.335)
	Yes	26	46			
Physical health						
Overweight	No	147	129	0.044*	1.899 (1.011-3.567)	1.098 (1.002-1.204)
	Yes	18	30			
Health-related risky behavior						
Drinking	No	130	124	0.861		
	Yes	35	35			
Risky sexual behaviors	No	162	147	0.014*	4.408 (1.220-15.929)	1.062 (1.011-1.115)
	Yes	3	12			
Stealing	No	162	158	0.332		
	Yes	3	1			
Social problem						
Bullying	No	152	132	0.013*	2.392 (1.186-4.823)	1.11 (1.021-1.206)
	Yes	13	27			
Lifetime being bullied	No	139	88	<0.001***	4.313 (2.558-7.274)	1.522 (1.304-1.776)
	Yes	26	71			
Smoking	No	164	157	0.54		
	Yes	1	2			

Note: ACE, adverse childhood experience. Depressive symptoms was defined as a score≥ 14 in the Beck depression inventory. Being overweight was defined as body mass index ≥ 25. This table was analyzed with Chi squared test. Boldface indicates statistical significance (*p<0.05; **p<0.01; ***p<0.001)

Conclusion

ACEs have been significantly associated with high-risk behaviors and poor health outcomes in medical students in Taiwan. Addressing these issues is critical for the well-being of future medical health providers.