

Tobacco Use Behaviors among Adults Exposed to Adverse Childhood Experiences: A Systematic Review and Meta-analysis

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BACKGROUND

- Adverse childhood experiences (ACEs) are recognized as contributors to tobacco use behaviors in a dose-response relationship during adulthood
- 20% of tobacco use cases can be attributed to ACEs.
- Although several reviews have documented the outcomes of ACEs on substance use behaviors, none have focused on the influence of cumulative ACEs (i.e., 4 or more) on the breadth of tobacco use behaviors.
- Examining the impact of cumulative ACEs on tobacco use behaviors may aid in further explaining vulnerabilities to tobacco use initiation as well as persistent use, failed cessation among users and the choice of tobacco products

RESEARCH QUESTIONS

- What is the prevalence of tobacco use behavior among people exposed to ACEs?
- What is the association between exposure to cumulative ACEs and tobacco use behaviors: Smoking status (ever, current, former, and heavy smoker), tobacco use initiation, nicotine dependence (ND), smoking cessation, and use of novel tobacco products?
- Are there gender differences in the relationship between cumulative ACEs and tobacco use behaviors?

METHOD

Search strategy

Conducted a comprehensive search for articles from the CINAHL, Psych info, and PubMed databases Published prior to October 2022

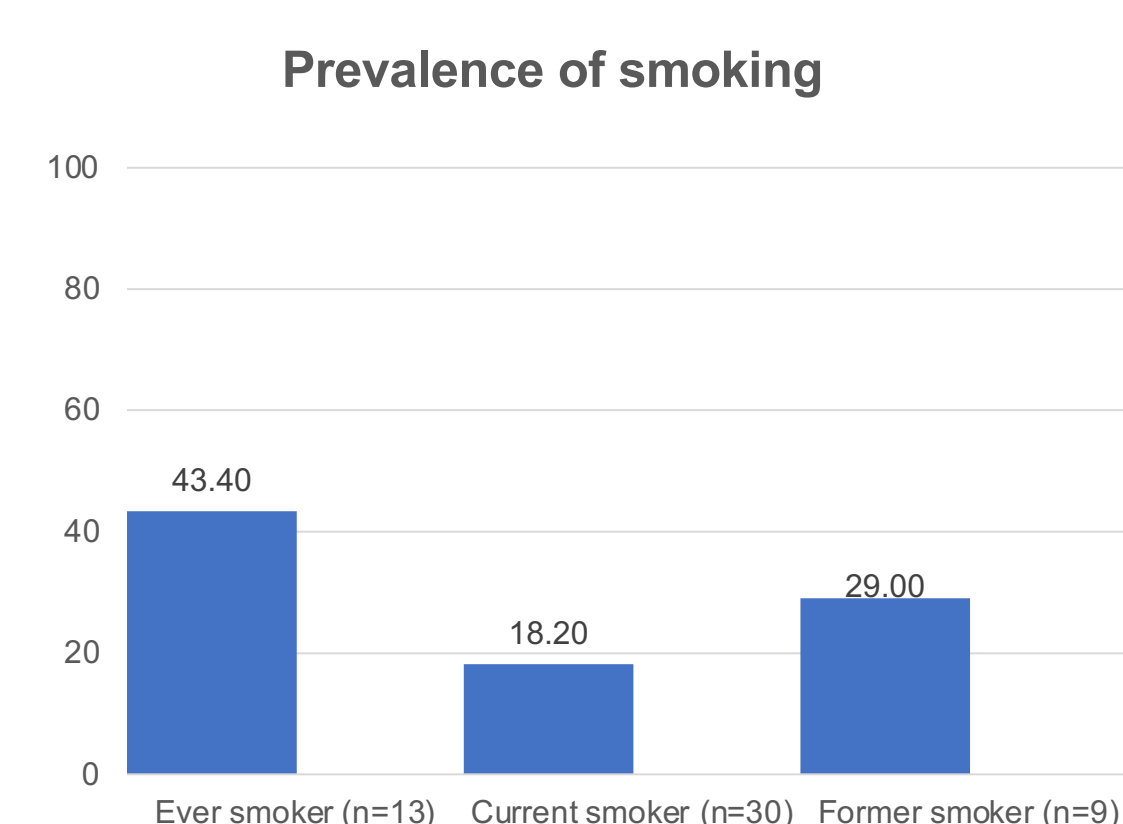
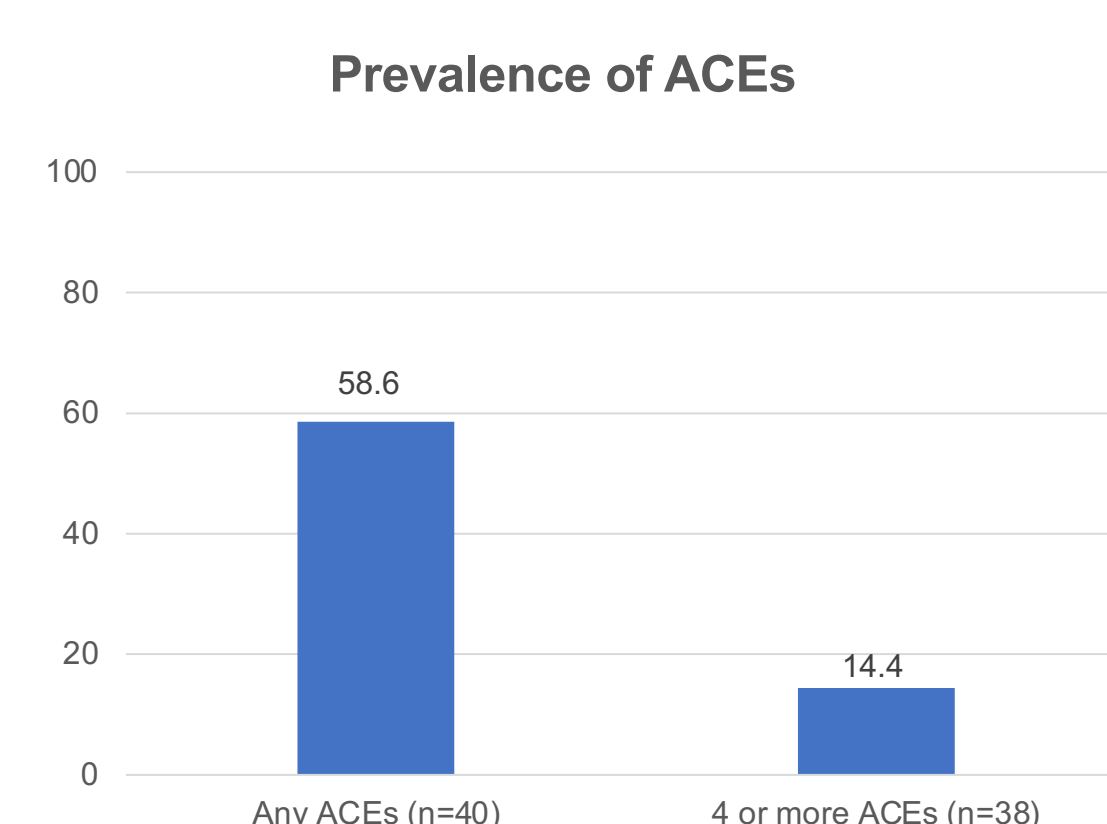
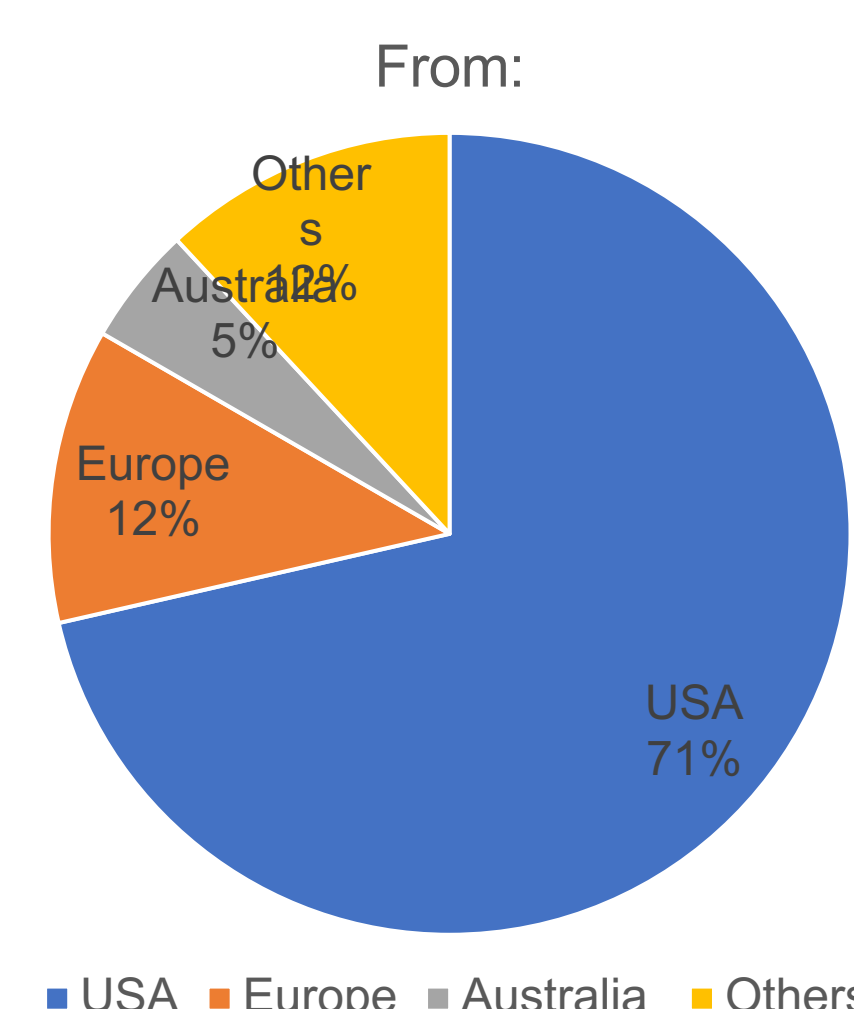
Keyword: "Adverse Childhood Experience (ACEs)" and "tobacco"

Inclusion criteria:

- Written in English
- Enrolled people 18 years or older
- Reported cumulative ACEs (i.e., 4 or more ACEs)

RESULTS

- We found 42 eligible studies, they were published between 1998 and 2022
- Comprised of 638,434 participants
- The mean age ranging between 22 to 56 years
- 37 studies enrolled a mixed sample of male and female



- People exposed to 4 or more ACEs were 4 times more likely to be current smokers and 2 times more likely to be ever smoker compared to those with no ACEs (see table 1).
- Exposure to 4 or more ACEs associated with all tobacco use behaviors (see table2)
- Several studies reported gender differences in terms of exposure to any ACEs, 4 or more ACEs, and current tobacco use (see table 3). However, two studies reported the impact of cumulative ACEs on current smoking status among male and female participants with contradictory outcomes.

Table 1. What is the prevalence of tobacco use behavior among people exposed to cumulative ACEs ?

Outcomes	Number of studies	Findings
Ever smoking (4 or more ACEs vs. no ACEs)	7	52.7% vs. 35.4% Effect size= 0.44 (medium effect) OR= 2.16 , 95%CI:1.73-2.70
Current smoking (4 or more ACEs vs. no ACEs)	17	27.3% vs. 10.8% Effect size= 0.63 (medium to large effect) OR= 3.73 , 95%CI:2.69-5.18
Former smoking (4 or more ACEs vs. no ACEs)	6	23.7% vs. 23.6% Effect size= 0.002 (no effect) OR=1.13, 95%CI:0.02-1.55

Table 2. What is the association between exposure to cumulative ACEs and tobacco use behaviors

Outcomes	Number of studies (N=42)	Findings
1. Current smokers	32	Exposure to 4 or more ACEs was significantly associated with all tobacco use behavior
2. Ever smokers	7	
3. Former smokers	4	
4. Heavy smokers (smoked 20 cigarettes or more/days)	3	
5. Early tobacco use initiation (started smoking before the age of 18)	3	
6. Severe tobacco use (smoke even if they have six or more symptoms associated with problematic use of tobacco)	1	
7. Continued tobacco use (smoked even if having an illness associated with tobacco use)	1	
8. Cravings for smoking	1	
9. Nicotine dependence	1	
10. Tobacco use cessation	0	
11. Current electronic cigarettes use	1	
12. Ever electronic cigarettes use	1	
13. Past year electronic cigarettes use	1	

Table 3. Are there gender differences in the relationship between exposure to cumulative ACEs and tobacco use behaviors?

Outcome (n)	Female	Male	P-value
Any ACEs (n=16)	60.0%	53.4%	0.19
4 > ACEs (n=14)	23.1%	14.5%	<0.001
Current smoking	14.7%	18.5%	<0.001

CONCLUSION

- In this review we summarized a wealth of evidence on the impact of cumulative exposure to ACEs on tobacco use behavior and highlights the gap in the literature among about the impact of ACEs on tobacco use behavior among vulnerable populations.
- We recommend conducting further research and reviews into the comorbidity of ACEs (means and severity) on tobacco use variables (e.g., nicotine dependence) to enlighten risk and protective factors.
- Future researchers may consider investigating the association between different ACE types and tobacco use behavior among adults.

REFERENCES

Abufarsakh, B., Okoli, C. T., Darville, A. K., Williams, L. B., Garcia, A. R., & Martin, C. (2023). Tobacco Use Behavior Among Adults Exposed to Cumulative Adverse Childhood Experiences: A Systematic Review and Meta Analysis. *Addictive Behaviors*, 107948.