Caliifornia State University, Long Beach

HSC 696 | Research Methods
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E-cigarettes and Depression among Adolescents

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Background

- In 2024, 1.63 million students reported currently using e-cigarettes in the United States (CDC, 2024)
- In 2021- 2023, 19.2% of adolescents had the highest prevalence of depression compared to adults at 8.7% in the United States (Brody & Hughes, 2025).
- Research regarding the effects of e-cigarette use on mental health is still being done in order to understand the connection between e-cigarette use and depression among adolescents.



Purpose

Is there an association between using e-cigarettes and depression among adolescents (12-17 years of age) in the United States?

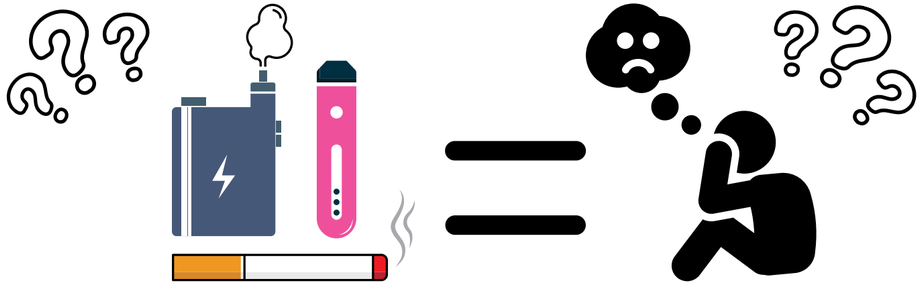
Exposure: smoking (e-cigarettes)
Outcome: Depression

Methods



Run descriptive statistical analysis on the frequency of the responses that adolescents stated they experienced the following:

- **DPQ010 - Have little interest in doing things**
- **DPQ020 - Feeling down, depressed, or hopeless**
- **DPQ030 - Trouble sleeping or sleeping too much**
- **DPQ040 - Feeling tired or having little energy**



Chi-square test to view how much adolescents responded to smoking and having depression:

Depression + Used e-cigarettes for the last 5 days

Results

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
depression * SMQ846	5477	45.9%	6456	54.1%	11933	100.0%

depression * SMQ846 Crosstabulation

			SMQ846		
			1	2	Total
depression	1	Count	315	3614	3929
		% within SMQ846	86.5%	70.7%	71.7%
	2	Count	49	1499	1548
		% within SMQ846	13.5%	29.3%	28.3%
Total		Count	364	5113	5477
		% within SMQ846	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	42.135[a]	1	<.001		
Continuity Correction[b]	41.357	1	<.001		
Likelihood Ratio	48.272	1	<.001		
Fisher's Exact Test				<.001	<.001
Linear-by-Linear Association	42.128	1	<.001		
N of Valid Cases	5477				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 102.88.

b. Computed only for a 2x2 table

Variables:

- **Depression:(n=5,477)**
  - **1= Yes**
  - **2= No**
- **SMQ846: Used last 5 days - E-cigarettes (n=6,456)**

% of adolescents who used e-cigarettes in the last 5 days and stated to have depression: 86.5%

% of adolescents who DID NOT use e-cigarettes in the last 5 days and stated to have depression: 70.7%

% of adolescents who used e-cigarettes in the last 5 days and stated NO depression: 13.5%

% of adolescents who DID NOT use e-cigarettes in the last 5 days and stated NO depression: 29.3%

Limitation

- No data collected on the NHANES 2021-2023 on marijuana e-cigarette use
- NHANES 2021-2023 Mental Health-Depression questionnaire, there was not a question regarding using a substance to cope with their depression, whereas previous questionnaires did included hence question.

Thank You!

References

Brody, D., & Hughes, J. (2025a). Prevalence of Depression in Adolescents and Adults: United States, August 2021–August 2023, 1–11. https://doi.org/10.15620/cdc/174579

Centers for Disease Control and Prevention. (n.d.). National Health and Nutrition Examination Survey Mental Health - Depression Screener - Youth DPQY_L_R. Centers for Disease Control and Prevention. https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2021/DataFiles/DPQY_L_R.htm

Centers for Disease Control and Prevention. (n.d.-b). National Health and Nutrition Examination Survey Drug Use- Duq_l_r. Centers for Disease Control and Prevention. https:/wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2021/DataFiles/DUQ_L_R.htm

Centers for Disease Control and Prevention. (n.d.-d). National Health and Nutrition Examination Survey- Smoking - Recent Tobacco Use (SMQRTU_L). Centers for Disease Control and Prevention. https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2021/DataFiles/SMQRTU_L.htm

Teenage drug use statistics [2025]: Data & Trends on abuse. NCDAS. (2025, August 12). https://drugabusestatistics.org/teen-drug-use#:~:text=Substance%20Abuse%20Among%20Youth,aged%2015%20to%2024%20years.

VanFrank, B., Williams, T. R., Alcantara, I. C., Hertz, M., Al-Shawaf, M., Meyers, C., & West, A. (2025). E-cigarette use and symptoms of depression and anxiety among US middle and high school students. Preventing Chronic Disease, 22. https://doi.org/10.5888/pcd22.250186