TEXAS
Health and Human Services

Texas Department of State Health Services

Association Between Current Electronic Vapor Product Use and Asthma Among Youth (Texas YRBS 2021)

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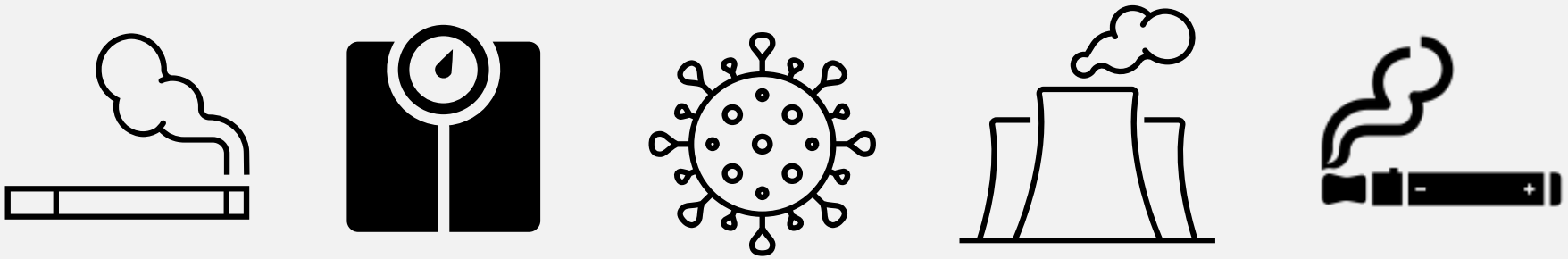
Background

- Asthma is a chronic condition that can be exacerbated by environmental factors.

- Modifiable risk factors for asthma in youth include:



Cigarette Smoking

Weight Status (overweight /obesity)

Exposure to Mold Spores

Exposure to Air Pollution

Electronic Vapor Product Use

Abreo, A., Gebretsadik, T., Stone, C. A., & Hartert, T. V. (2018). The impact of modifiable risk factor reduction on childhood asthma development. Clinical and translational medicine, 7(1), 15. https://doi.org/10.1186/s40169-018-0195-4

Background

- Although traditional tobacco use has declined in recent years, the prevalence of electronic vapor (e-vapor) product use has become increasingly more common among youth.

- In 2022, about 2.55 million middle and high school students in the US reported current (past 30-day) e-vapor product use. Among these individuals almost 85% used flavored e-vapor products and more than half used disposable ones.

Centers for Disease Control. 2022, October 6. More than 2.5 Million Youth Reported E-Cigarette Use in 2022. CDC Newsroom. https://www.cdc.gov/media/releases/2022/p1007-e-cigarette-use.html

Objective

This study aims to evaluate the association between current e-vapor use and asthma in Texas utilizing the 2021 Texas Youth Risk Behavior Survey.

Methods: Data Source

- We obtained Texas Youth Risk Behavior Survey (YRBS) Public Use data files for 2021.

- Data contains surveillance information to monitor Healthy People 2030 Objectives, such as smoking, weight status, exercise, alcohol consumption, sexual activity, and other risk factors.

Methods: Overview

Obtain 2021 YRBS Data (n=1,682)

Remove missing data for the asthma outcome variable (n=1,418)

Create binary variables for outcome variable asthma (yes/no) and exposure e-vapor use (yes/no)

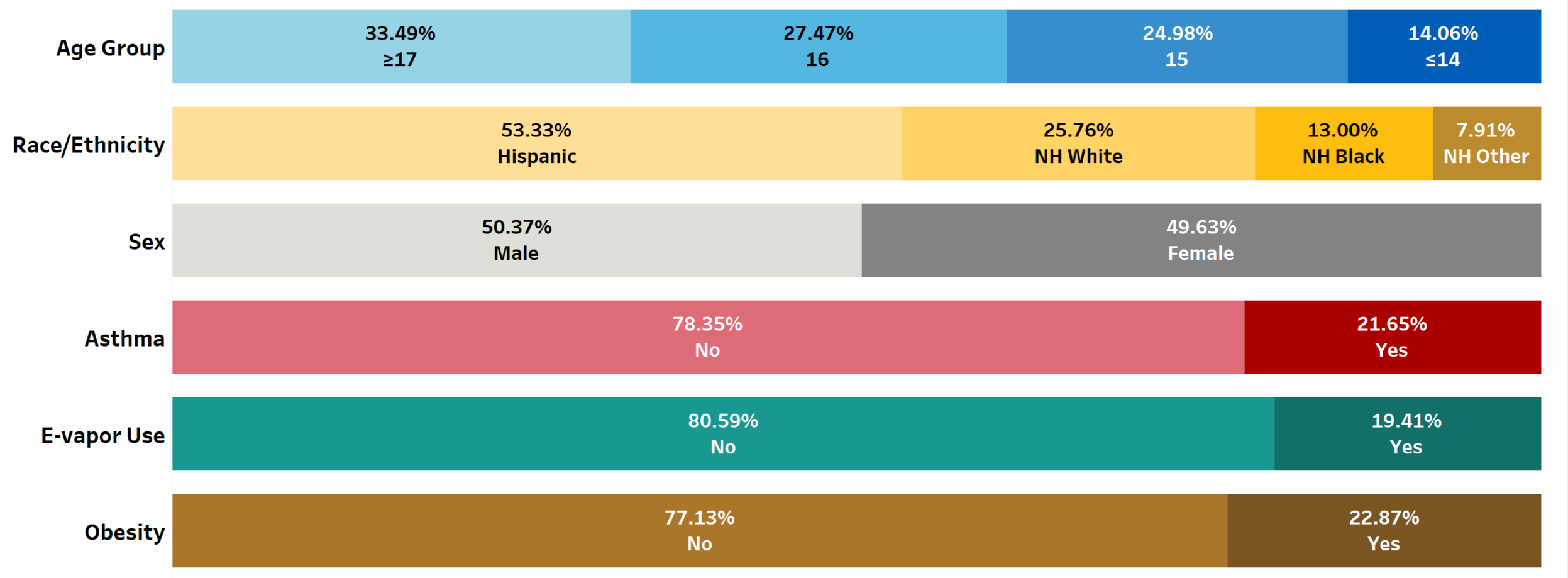
Use weighted logistic regression to estimate the association between e-vapor use and asthma while controlling for sociodemographic characteristics

Methods: Variables

- Outcomes:
  - Asthma
    - Has a doctor or nurse ever told you that you have asthma?

- Explanatory variables:
  - E-vapor use
    - During the past 30 days, on how many days did you use an electronic vapor product?
  - Obesity
    - Students who had obesity (≥95th percentile for body mass index, based on sex- and age-specific reference data from the 2000 CDC growth charts)
  - Race/ethnicity (NH White, NH Black, Hispanic, and NH Other)
  - Age in years (14 years and younger, 15 years old, 16 years old, 17 years and older)
  - Sex (Male, Female)

Demographic Characteristics of the YRBS Sample Used for Analysis



NH: Non-Hispanic; Hispanic includes Hispanic/Latino and multiple races who also identify as Hispanic; NH Other includes Am Indian/Alaska Native, Asian, Native Hawaiian/Other PI, and Multiple NH
Reported percentages are weighted to reflect estimated state population totals.

Results of Weighted Logistic Regression Analysis

Variable	Results	
	AOR*	95% CI
E-Vapor Use		
No	Ref.	Ref.
Yes	**1.79**	**(1.19, 2.69)**
Obesity		
No	Ref.	Ref.
Yes	**1.49**	**(1.04, 2.16)**
Race/Ethnicity		
NH† White	Ref.	Ref.
NH Other‡	**0.47**	**(0.24, 0.94)**
NH Black	1.52	(0.74, 3.13)
Hispanic§	0.74	(0.44, 1.24)

*AOR: Adjusted Odds Ratio
†NH: Non-Hispanic
‡NH Other includes Am Indian/Alaska Native, Asian, Native Hawaiian/Other PI, and Multiple NH
§Hispanic includes Hispanic/Latino and multiple races who also identify as Hispanic

Results

- Compared to non-current e-vapor users, e-vapor users were 79% more likely to report a current asthma diagnosis.
- Students classified as obese were 49% more likely to report a current asthma diagnosis than those without obesity.
- In comparison to non-Hispanic White individuals, non-Hispanic other individuals were 53% less likely to report a current asthma diagnosis.
- Age and sex had non-significant results.

Discussion

- There is an association between potential modifiable risk factors, such as current e-vapor use and obesity, and a current asthma diagnosis among Texas youth.

- Further research is warranted to understand how unmeasured risk may influence the relationship between e-vapor use, obesity, and asthma among this population.

- Interventions targeting these modifiable risk factors may be important to mitigate the burden of asthma among Texas youth.

Limitations

- The YRBS is only administered to youth who attend school and may not be representative of all individuals in this age group.
- Cross-sectional survey data captures one point in time and can only measure associations and not causality.
- Self-reported data which can lead to recall bias.

Underwood JM, Brener N, Thornton J, et al. Overview and Methods for the Youth Risk Behavior Surveillance System - United States, 2019. MMWR Suppl. 2020;69(1):1-10. Published 2020 Aug 21. doi:10.15585/mmwr.su6901a1

References

- Abreo, A., Gebretsadik, T., Stone, C. A., & Hartert, T. V. (2018). The impact of modifiable risk factor reduction on childhood asthma development. Clinical and translational medicine, 7(1), 15. https://doi.org/10.1186/s40169-018-0195-4
- Centers for Disease Control. 2022, October 6. More than 2.5 Million Youth Reported E-Cigarette Use in 2022. CDC Newsroom. https://www.cdc.gov/media/releases/2022/p1007-e-cigarette-use.html
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- Texas Department of State Health Services. 2021 Texas Youth Risk Behavior Survey. Available at: https://www.dshs.texas.gov/texas-youth-risk-behavior-surveillance-system. Accessed on 11/27/2023.

Thank you!

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