

# Examining the Relationship of Physical and Mental Health with Oral Health Concerns among Rhode Island High School Students

Kylie Khoo<sup>1</sup>, Samuel Zwetchkenbaum, DDS, MPH<sup>2</sup>, Michelle Rogers, PhD<sup>1</sup>  
<sup>1</sup>Brown University School of Public Health, <sup>2</sup>Rhode Island Department of Health

## Overview

We assessed the relationship of physical and mental health with three oral health concerns among Rhode Island (RI) high school students.

## Background

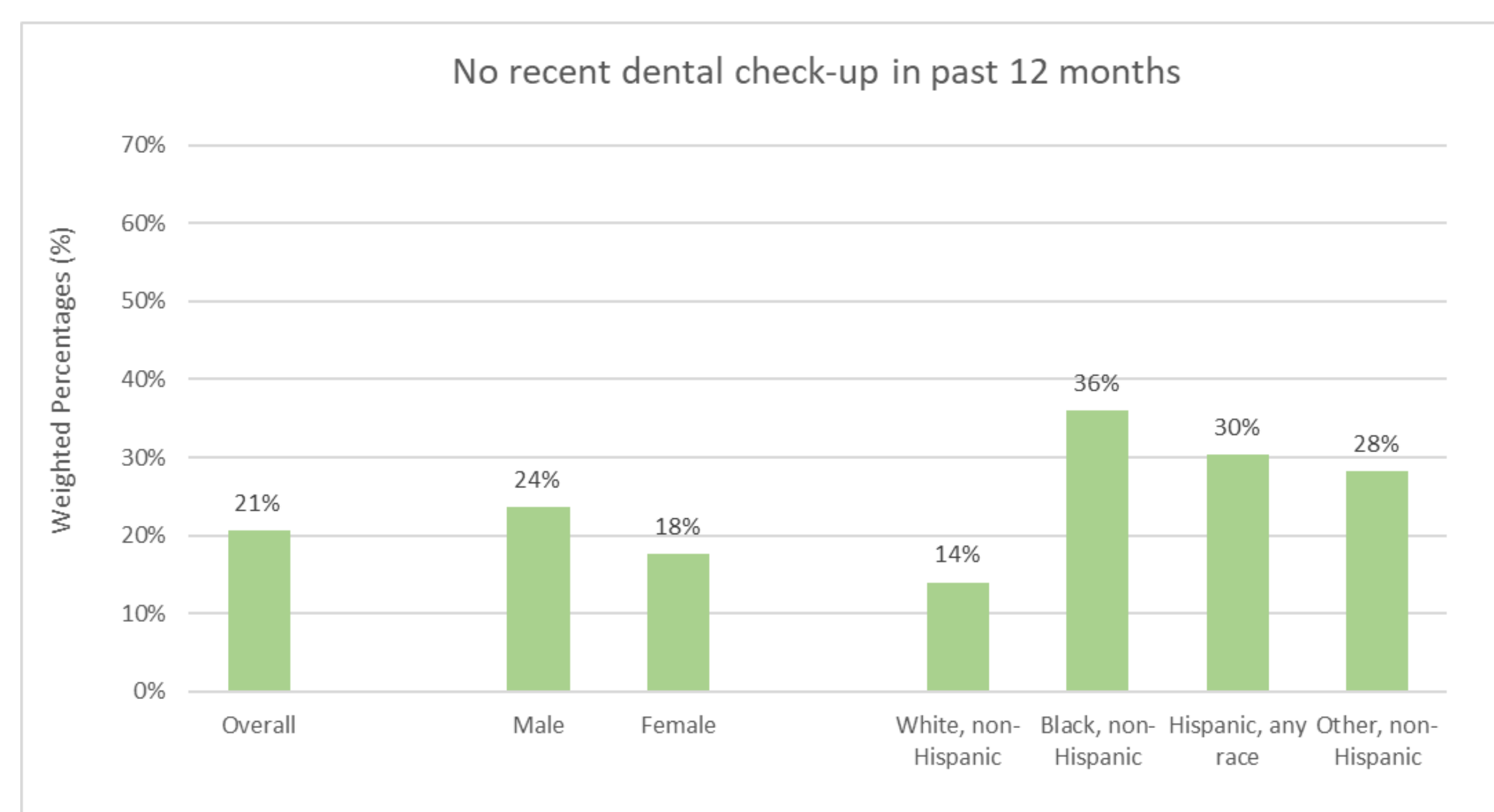
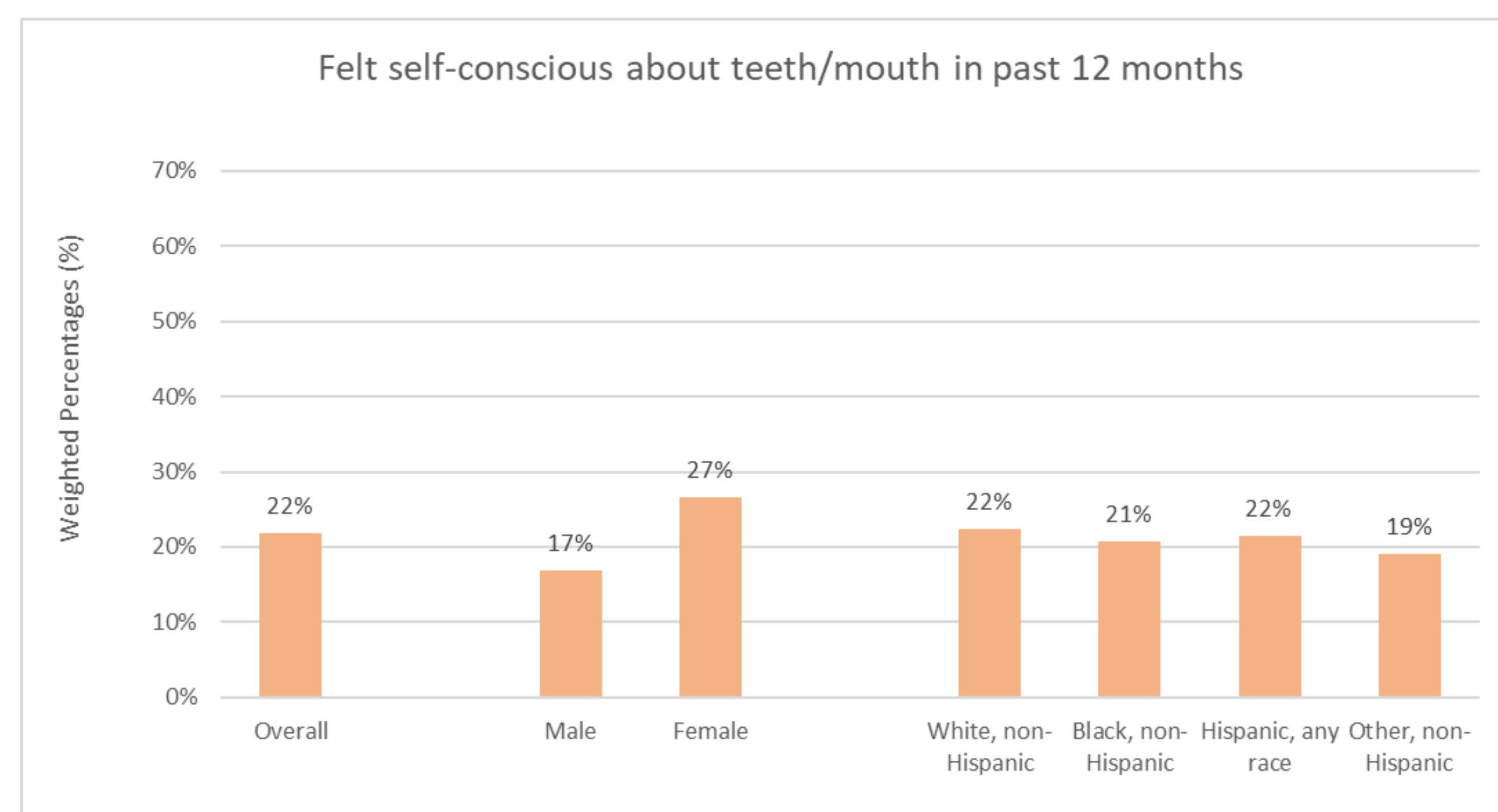
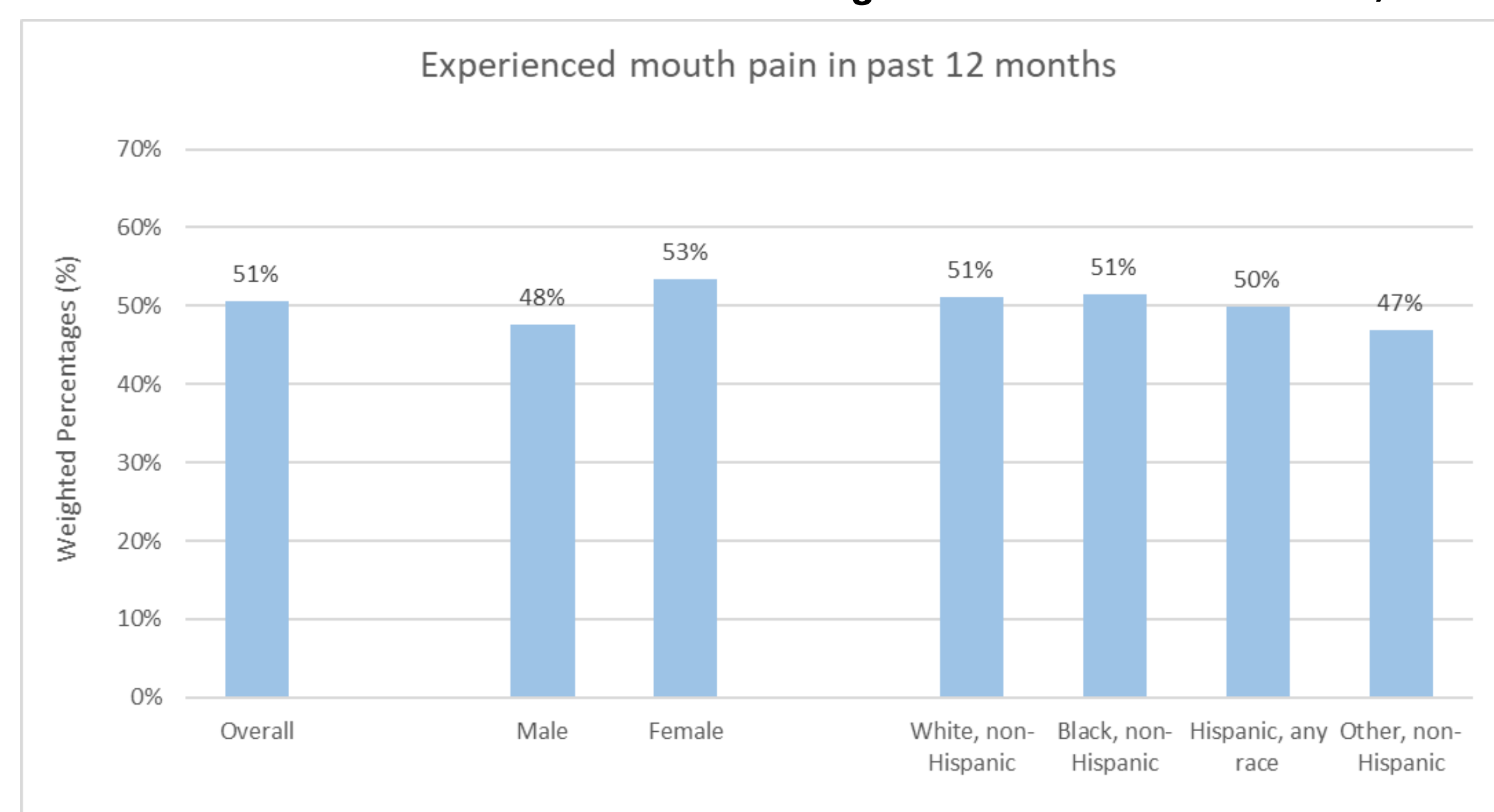
- Dental caries (tooth decay) is a prevalent chronic infectious disease caused by cariogenic bacteria that adhere to teeth and metabolize sugars, producing acid that eventually erodes the tooth structure through demineralization.<sup>1</sup>
- The risk of caries is particularly high throughout adolescence.<sup>2</sup>
- Factors such as excessive sugar consumption can contribute to dental decay among adolescents.<sup>3</sup>
- Depression and anxiety can affect oral health by leading to poor oral hygiene habits, which can cause gum disease and tooth decay.
- Maintaining good physical health through a healthy lifestyle, including regular exercise and a balanced diet, can positively impact oral health.
- Examining adolescents' physical and mental health could uncover potential connections with oral health concerns in this demographic.

## Methods

- **Data source:** 2019 RI Youth Risk Behavior Survey (YRBS), a random sample of 1,613 RI high school students.
- **Measures:**
  - **Oral health concerns:** experienced mouth pain in past 12 months, felt self-conscious/embarrassed about teeth or mouth in past 12 months, did not have a dental check-up in past 12 months (note: RI YRBS only addresses the potential impact of caries rather than the presence of disease)
  - **Physical health:** dietary consumption, regular physical activity, BMI
  - **Mental health:** felt sad or hopeless continuously for two weeks or more in past 12 months
- **Statistical analysis:** Weighted multivariable logistic regression models were used to test the association of physical activity, diet, BMI, and mental health with experiencing mouth pain, self-consciousness/embarrassment about their teeth, and lack of recent dental check-ups, controlling for age, gender, and race/ethnicity.

## Results

Prevalence of oral health concerns among Rhode Island adolescents, 2019



Association of mental health with each oral health concerns in the past 12 months among RI high school students

Outcome	Mental Health	
	OR	95% CI
Mouth pain	2.06	(1.32, 3.20)
Self-conscious about teeth/mouth	3.05	(1.63, 5.70)
Dental check-up more than 12 months	2.16	(1.22, 3.82)

- Poor mental health was associated with an increased likelihood of experiencing all three outcomes.
- In the adjusted models, there was no association of physical health with any of the outcomes.

## Conclusions

- Experiencing mouth pain was a common occurrence for RI adolescents.
- Adolescents with mental health concerns were more likely to experience mouth pain, feel self-conscious/embarrassed about their teeth or mouth, and not have a recent dental check-up.
- Improving *interprofessional collaboration* is necessary. Oral health providers need to consider their patients' mental health as a factor in their care and mental health professionals need to encourage their adolescent patients to practice good oral hygiene and provide referrals to dentists.

## References

1. Selwitz RH, Ismail AI, Pitts NB. Dental caries. Lancet. 2007 Jan 6;369(9555):51-9. doi: 10.1016/S0140-6736(07)60031-2.
2. Li J, Zhang K, Lu Z. Prevalence and factors contributing to dental caries in 12-15-year-old school adolescents in northeast China. BMJ Open. 2021 Nov 12;11(11):e044758. doi: 10.1136/bmjopen-2020-044758.
3. Kumar S, Kroon J, Laloo R, Kulkarni S, Johnson NW. Relationship between body mass index and dental caries in children, and the influence of socio-economic status. Int Dent J. 2017 Apr;67(2):91-97. English. doi: 10.1111/idj.12259. Epub 2016 Oct 17.