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Unveiling Trends, Demographic Differences, and the Importance of Public Health Surveillance: Exploring Unhealthy Weight Control Behaviors Among Arizona Youth

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ABSTRACT

Objective: Disordered eating and unhealthy weight control behaviors (UWCBs) among United States teens are critical yet understudied public health issues, disproportionately affecting diverse demographic groups. This study examines trends in UWCBs among Arizona youth from 2011 to 2021 and documents differences by demographics and weight perception.

Method: Data from the 2011–2021 Arizona Youth Risk Behavior Survey (YRBS), a biennial survey conducted among students in grades 9–12 ($N = 1181$ in 2021), were analyzed, with the focus on the 2021 data. This multi-year cross-sectional data include questions about weight perception, desire to control weight, and engagement in UWCBs. Logistic regressions were then conducted to examine their associations.

Results: A notable increase in UWCBs was revealed from 2011 to 2021 (19.4%–29.1%), particularly post-2017. In 2021, 44.3% of girls and 53.1% of LGBQ+ (lesbian, gay, bisexual, questioning, and other identities) teens reported UWCBs. Teens aspiring to lose weight were 9.6 times more likely to engage in UWCBs than their peers who did not desire weight change (OR = 9.6, 95% CI [4.6–20.0]) after adjusting for demographics and body mass index.

Discussion: These findings underscore the urgency of comprehensive interventions to mitigate UWCBs and the need for strategies addressing contributing factors in diverse youth populations.

1 | Introduction

Disordered eating encompasses a range of maladaptive eating patterns (e.g., fasting, diet pill use, and purging) related to disturbed body image and/or weight and shape concerns and is a mounting public health issue for United States youth. These behaviors—often termed "unhealthy weight control behaviors" (UWCBs)—may be a risk factor for or a symptom of an eating disorder such as anorexia nervosa and bulimia nervosa (Liechty and Lee 2013), which have among the highest mortality rates of all psychiatric disorders (Van Hoeken and Hoek 2020) and are associated with substantial economic

Summary

- The study highlights rising unhealthy weight control behaviors (UWCBs) among Arizona teens from 2011 to 2021. These behaviors are particularly prevalent among females and LGBQ+ youth.
- The findings emphasize the need for targeted interventions that address weight perception and motivations for weight control among adolescents.
- Future public health programs should promote health-focused messages over weight loss to mitigate UWCB risks and associated health outcomes.

costs to families and society (Streatfeild et al. 2021). Even absent an eventual eating disorder diagnosis, however, UWCBs can contribute to severe and sometimes long-lasting health and psychosocial consequences, including malnutrition, cardiovascular complications, hormonal imbalances, depression, anxiety, suicidality, and reduced quality of life (Kärkkäinen et al. 2018). The most recently available representative data from 2013 suggest that upwards of 16% of United States youth engage in UWCBs each year (Chin et al. 2018; Beccia et al. 2019), with youth from food-insecure backgrounds and those from diverse demographic groups (e.g., girls and youth with diverse sexual orientations) often being more affected due to factors such as heightened stress and reduced access to mental healthcare (Beccia et al. 2019; Sonneville and Lipson 2018). Concerningly, there is also growing evidence to suggest that prevalence has increased and inequities have widened since 2020 due to the COVID-19 pandemic (Devoe et al. 2023) and related increases in weight pressures and weight-related stigma/harassment (Simone et al. 2022).

There is an urgent need for updated representative estimates of UWCB prevalence among United States youth, overall and by state, to better understand these patterns and inform interventions. We had three research objectives: (1) to analyze trends in the prevalence of UWCBs, weight-related motivations (e.g., desires to lose weight), and weight perception (e.g., believing oneself to be "overweight") among Arizona youth from 2011 to 2021; 2) to document differences in UWCBs, weight-related motivations, and weight perception by age, race/ethnicity, sex, sexual orientation, and weight status; and (3) to quantify demographic-adjusted associations between UWCBs, weight-related motivations, and weight perception.

2 | Method

The 2011–2021 Arizona Youth Risk Behavior Survey (YRBS) data were utilized to gain insights directly from youth reporting on their experiences. The Arizona YRBS is a population-based survey of high school students in Grades 9–12, conducted biennially, to collect information on a wide range of health behaviors. Arizona was one of the 45 states that participated in the YRBS in 2021 and one of only a few states that assessed relevant UWCBs in their YRBS questionnaire. Importantly, Arizona is a racially and ethnically diverse state that has among the largest Indigenous populations in the United States; measures of key demographic factors in the survey allowed for the examination of the social patterning of UWCBs with more nuance and rigor than has been possible in recent studies. Regarding methodology, the Arizona YRBS was administered in partnership with the Centers for Disease Control and Prevention and ICF (an organization contracted with the Arizona Department of Health Services (ADHS) to support data collection). The survey used a three-stage cluster design by selecting primary sampling units, schools, and classes to obtain a representative sample of students in grades 9–12 who attend public and charter schools. Student participation is anonymous and voluntary and is completed in classroom settings either electronically or on paper under the supervision of trained data collectors. The 2011–2021 Arizona YRBS required passive parental consent in which parents were required to turn in a signed form only if they did not want their adolescent child to participate. More information and the YRBS methodology and the codebooks are available at https://www.cdc.gov/yrbs/ This study is exempt from human subjects review board approval as the study utilized publicly available data.

The study used the 2011–2021 Arizona YRBS, focusing on the 2021 Arizona YRBS ($n = 1181$ adolescents) to provide timely, up-to-date estimates of UWCB prevalence and inequities. About 79% of eligible sampled students enrolled in schools that agreed to participate, and 58% of eligible schools in Arizona participated in the survey (overall response rate accounting for all eligible students: 46%). Because of listwise deletion in regression analyses, the final analytic sample was 993.

2.1 | Measures

2.1.1 | Unhealthy Weight Control Behaviors (UWCBs)

The 2011–2017 YRBS questionnaires included three questions related to UWCBs. These questions asked if, during the past 30 days, participants (1) went without eating for 24 h or more to lose or keep from gaining weight, (2) took any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight, and (3) vomited or took laxatives to lose or keep from gaining weight. All three questions had a binary response option (yes, no). In the 2019 and 2021 YRBS surveys, a composite UWCB question was administered, with "smoking cigarettes" added as an additional example. Participants were asked, "During the past 30 days, did you try to lose weight or prevent weight gain by not eating for 24 h or more, using any diet pills, powders, or liquids, vomiting or taking laxatives, smoking cigarettes, or skipping meals?" with the binary response option.

2.1.2 | Weight-Related Motivations

Participants were asked which of the following they were trying to do about their weight, with response options including "lose weight," "gain weight," "stay the same weight," and "I am not trying to do anything about my weight."

2.1.3 | Weight Perception

Participants were asked to describe their weight, with response options including "very underweight," "slightly underweight," "about the right weight," "slightly overweight," and "very overweight."

2.1.4 | Body Mass Index (BMI)

Participants were asked to enter their height (in inches) and weight (in pounds). For each state, the CDC calculated body mass index (BMI) percentiles based on sex and age-specific reference data from the 2000 CDC growth charts developed by the CDC's Division of Nutrition, Physical Activity, and Obesity. A student is considered overweight when the BMI percentile is at or above the 85th percentile and below the 95th percentile for BMI by age and sex. A student is considered obese when the BMI percentile is at or above the 95th percentile for BMI by age and sex.

2.1.5 | Demographics

The 2011–2021 YRBS included three questions regarding age, sex, sexual orientation, and race/ethnicity. Participants were asked to specify their age from response options, ranging from "12 years old or younger," "13 years old," "14 years old," "15 years old," "16 years old," "17 years old," to "18 years old or older." A question of sex included binary response options, "Female" or "Male.". A question regarding grade level asked participants to specify their current academic year, providing options from "9th grade" to "12th grade," along with an additional category for those in "Ungraded or other grade."

Additionally, participants were asked whether they identified themselves as Hispanic or Latino (yes/no) and to select one or more racial identities from a list including options such as "American Indian or Alaska Native," "Asian," "Black or African American," "Native Hawaiian or Other Pacific Islander," and "White." Starting from the 2013 YRBS, the survey asked participants to select the statement that best describes their sexual orientation. Options included heterosexual, lesbian, gay, bisexual, questioning, other, and not understanding the question (the YRBS did not include a question assessing the transgender [T] identity). Given small subgroup sample sizes, we combined gay, lesbian, bisexual, questioning, and other respondents into a single 'LGBQ+' category.

2.2 | Data Analysis

Descriptive statistics were performed to analyze trends in UWCBs, weight-related motivations, and weight perception. Using the 2021 YRBS data, chi-square tests were used to compare the prevalence of UWCBs, weight-related motivations, and weight perception across demographic groups. Finally, three logistic models were fit to quantify associations between BMI, weight perception, or desire to lose/gain/maintain weight and UWCBs while controlling for age, race/ethnicity, sex, and sexual orientation. First, Model 1 was included as an exploratory model to examine the association between BMI and UWCBs after controlling for demographics. Models 2 and 3 examined associations between either weight perception or weight-related motivations and UWCBs after controlling for demographics and BMI. These models were designed to examine the relationship between BMI and UWCBs, both before and after accounting for weight perception and weight-related motivations. The goal is to question the common belief that higher weight status, rather than societal weight stigma and the resulting weight misperceptions, is the primary risk factor for UWCBs. A p-value < 0.05 was considered statistically significant. SAS (version 9.4; SAS Institute Inc) was used to conduct all analyses (SAS 2023), and appropriate procedures were used to account for the complex sampling methods, incorporating strata, cluster, and weight variables to ensure accurate population estimates and standard errors.

3 | Results

Table 1 shows descriptive statistics of the demographic characteristics, weight perception, desire to control weight, BMI, and UWCBs in the 2021 YRBS (findings from the 2011–2019 YRBS are found in the Table S1). About 50.5% of teens identified as female; 27.2% identified as LGBQ+. Almost half (46.7%) were Hispanic, 37.5% were non-Hispanic white, 7.2% were multiracial, and 4.8% were non-Hispanic Black.

In 2021, about one-third of teens reported that they were slightly to very overweight (Table 1). Almost half (46.0%) believed they were of the right weight; 16.9% reported they were slightly underweight, and 3.4% reported they were very underweight. There were no significant differences in the proportion of teens who reported being slightly (28.3%) or very overweight (5.3%) by age, race/ethnicity, or sex (Table 2). However, LGBQ+ teens were more likely to report being slightly or very overweight than their heterosexual peers (28.8% vs. 46.6%; X^2 [1, $N = 1120$] = 31.61, $p < 0.001$).

Regarding weight perception, four in five teens reported a desire to gain, lose, or maintain their weight, with most (45.9%) reporting wanting to lose weight (Table 1). As shown in Table 2, the desire to lose weight was more common among females than males (57.2% vs. 35.0%; X^2 [1, $N = 1143$] = 56.60, $p < 0.001$), among Hispanic teens than non-Hispanic white and non-Hispanic multiracial/others (51.5% vs. 39.2% vs. 46.3%; X^2 [2, $N = 1137$] = 14.47, $p = 0.004$), and among LGBQ+ teens than heterosexual teens (58.1% vs. 41.9; X^2 [1, $N = 1122$] = 23.48, $p < 0.001$).

Approximately one-third of teens reported engaging in UWCBs within the last 30 days (Table 1). As shown in Table 2, UWCBs were most prevalent among 16-year-olds (34.9%; X^2 [1, $N = 1145$] = 12.31; $p = 0.007$), girls than boys (44.3% vs. 14.1%; X^2 [1, $N = 1138$] = 126.21; $p < 0.001$), and LGBQ+ teens than heterosexual teens (53.1% vs. 20.8%; X^2 [1, $N = 1118$] = 111.15; $p < 0.001$).

Considering the trend data, the prevalence of UWCBs appeared to rise from 2011 to 2021 (Figure 1). The number of teens reporting UWCBs notably increased after 2017, with the trend becoming steeper between 2019 and 2021. However, despite the rise in UWCBs, the proportion of teens who described themselves as

TABLE 1 | Sociodemographic characteristics, weight perception, and unhealthy weight control behaviors (UWCB) of the study population—Youth Risk Behavior Survey (YRBS), Arizona, 2021 ($N = 1181$).

Variable		Weighted %
Age group	14 years old or younger	19.9
	15 years old	23.6
	16 years old	24.9
	17 years old	23.2
	18 years old or older	8.3
Grade	9th	25.3
	10th	24.9
	11th	23.5
	12th	25.5
Sex	Male	49.5
	Female	50.5
Sexual orientation	LGBQ+	27.2
	Heterosexual	72.8
Race/ethnicity	Hispanic	46.7
	Non-Hispanic White	37.5
	Non-Hispanic Black	4.8
	Non-Hispanic American Indian Native American	1.3
	Non-Hispanic Asian/Native Hawaiian/Pacific Islander	2.6
	Non-Hispanic Multiracial	7.2
Weight perception	Very underweight	3.4
	Slightly underweight	16.9
	About the right weight	46.0
	Slightly overweight	28.3
	Very overweight	5.3
Desire to control weight	Weight-related motivations (trying to gain, lose, or stay the same)	81.3
	Desire to lose weight	45.9
	Desire to gain weight	21.9
	Desire to stay the same	13.5
	Not trying to do anything with their weight	18.6
Body mass index (BMI)[a]	>= 95th percentile	14.9
	>= 85th percentile but < 95th percentile	16.9
Unhealthy weight control behaviors (UWCBs)	Tried to lose weight or keep from gaining weight by going without eating for 24 h or more; taking any diet pills, powders, or liquids; vomiting or taking laxatives; smoking cigarettes; or skipping meals	29.1

Note: Percentages are weighted estimates.
Abbreviation: LGBQ+ = lesbian, gay, bisexual, questioning, and other.
[a]Based on sex- and age-specific reference data from the 2000 CDC growth charts.

TABLE 2 | Percentages of adolescents who reported unhealthy weight control behaviors (UWCBs) and the desire to lose weight and described themselves as slightly or very overweight by demographics.

	Described themselves as slightly or very overweight				Desired to lose weight				UWCBs			
		95% CI				95% CI				95% CI		
Variable	**Weighted %**	**Lower**	**Upper**	***p***	**Weighted %**	**Lower**	**Upper**	***p***	**Weighted %**	**Lower**	**Upper**	***p***
Age												
14 years old or younger	33.2	29.0	37.4		47.6	42.0	53.1		26.4	21.1	31.8	
15 years old	35.4	28.5	42.3		46.4	37.8	54.9		31.0	26.1	35.8	
16 years old	32.6	27.2	38.0		46.5	38.5	54.6		34.9	27.9	41.8	
17 years old	32.6	27.0	38.2		44.6	41.7	47.5		24.5	21.3	27.7	
18 years old or older	36.3	19.5	53.1		42.2	26.2	58.2		26.2	20.2	32.2	
				0.929				*0.936*				*< 0.01*
Race/ethnicity												
Hispanic	36.3	32.2	40.4		51.5	47.8	55.2		28.2	24.2	32.2	
Non-Hispanic white	30.6	21.0	40.3		39.2	35.2	43.1		29.7	23.7	35.7	
Non-Hispanic multiracial/ others	34.2	26.5	41.9		46.3	33.6	59.0		31.3	23.3	39.4	
				0.479				*< 0.01*				*0.780*
Sex												
Female	38.5	30.3	46.7		57.2	52.4	62.0		44.3	40.1	48.4	
Male	28.9	25.3	32.6		35.0	30.2	39.8		14.1	11.3	16.9	
				0.051				*< 0.0001*				*< 0.0001*
Sexual orientation												
Heterosexual	28.8	25.8	31.8		41.9	37.6	46.2		20.8	18.2	23.3	
LGBQ+	46.6	38.7	54.5		58.1	51.9	64.3		53.1	47.8	58.5	
				< 0.0001				*< 0.0001*				*< 0.0001*

Note: Percentages are weighted estimates; UWCBs = Unhealthy weight control behaviors; non-Hispanic Black, non-Hispanic American Indian, non-Hispanic Native American, and non-Hispanic Multiracial were combined due to small sample sizes. A *p*-value of less than 0.05 is considered statistically significant.
Abbreviation: LGBQ+ = lesbian, gay, bisexual, questioning, and other.

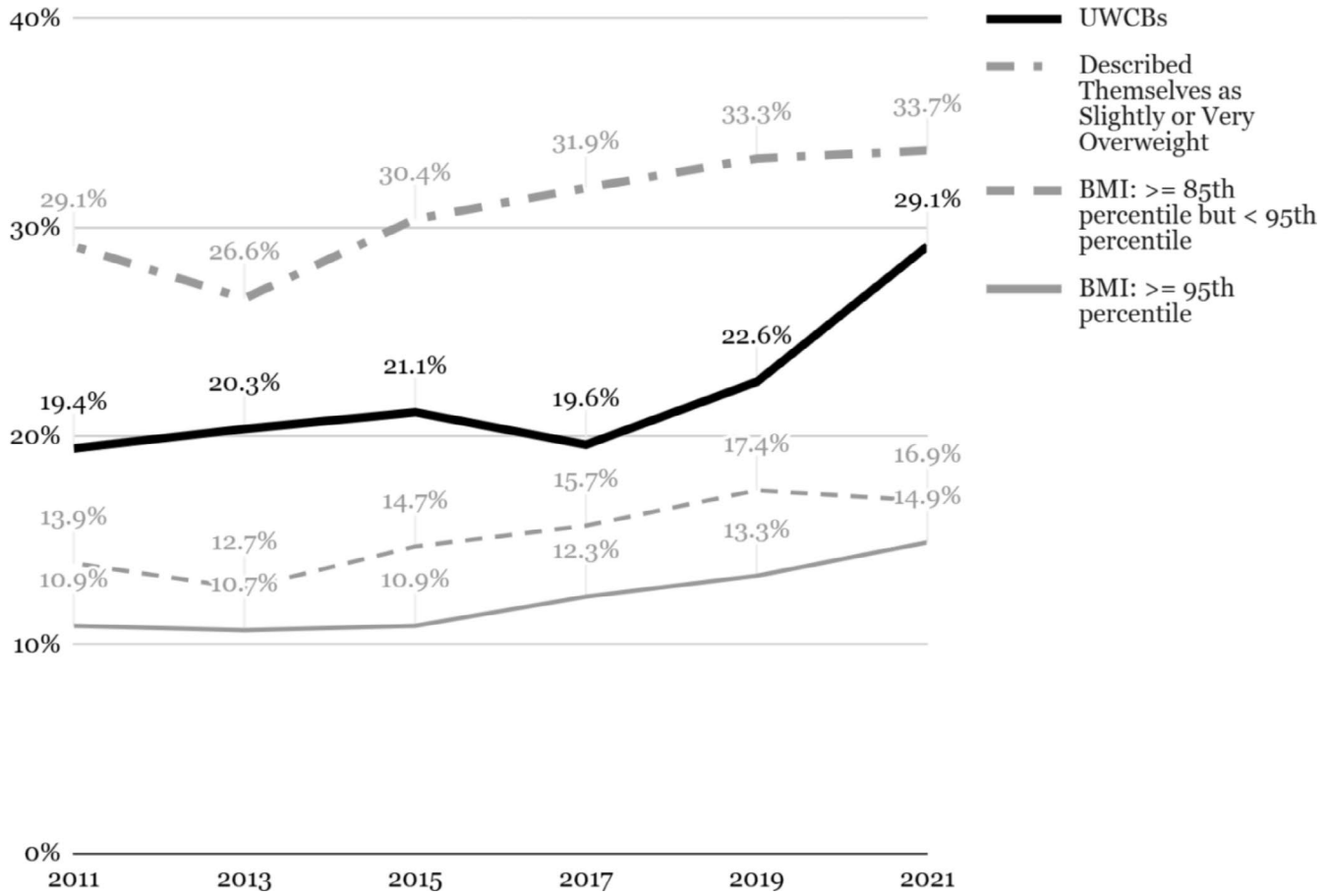

FIGURE 1 | The 10-year trend of unhealthy weight control behaviors (UWCBs) among Arizona youth (from 2011 to 2021). BMI = body mass index; UWCBs = unhealthy weight control behaviors.

slightly or very overweight (with a BMI equal to or greater than the 85th or 95th percentile) did not show a comparable increase.

Table 3 provides adjusted odds ratios (aORs) and corresponding 95% confidence intervals (CIs) for the adjusted associations between UWCBs and BMI, weight perception, or weight-related motivations in 2021. In Model 1, teens with a BMI equal to or greater than the 95th percentile were 1.5 times as likely to report UWCBs than those with a BMI less than the 95th percentile, although the confidence interval was wide and included 1 (aOR = 1.5, 95% CI [0.8–2.7]). In Model 2, teens who viewed themselves as slightly or very overweight were 3.8 times as likely to report UWCBs (aOR = 3.8, 95% CI [2.7–5.2]) than those who did not describe themselves as slightly/very overweight. Notably, the positive association between BMI and UWCBs became non-significant and changed direction (aOR = 0.6, 95% CI [0.3–1.2]) after accounting for weight perception. Lastly, Model 3 revealed that the desire to lose weight was strongly associated with UWCBs, as teens who desired to lose weight were 9.6 times as likely to report UWCBs (aOR = 9.6, 95% CI [4.6–20.0]) than those who were not trying to do anything about their weight. Teens who were trying to maintain weight were also 2.7 times more likely to report UWCBs (aOR = 2.7, 95% CI [1.2–6.3]) than those who were not trying to do anything about their weight; furthermore, those who were trying to gain weight were 1.4 times more likely to engage in UWCBs (aOR = 1.4, 95% CI [0.7–3.0]) than those who were not trying to do anything about their weight, although again, the confidence interval was wide and included 1.

4 | Discussion

The prevalence of UWCBs remained high over the last decade, notably increasing from 22.6% in 2019 to 29.1% in 2021 among Arizona teens. This is consistent with concerning data showing an increase in emergency department visits related to eating disorders from 2019 to 2022 (Radhakrishnan et al. 2022). High teen UWCB prevalence and its ties to eating disorder risk (Lessard and Puhl 2021) have been a long-standing public health concern calling for immediate attention (Forman-Hoffman 2004) and have worsened during the COVID-19 pandemic (Devoe et al. 2023). Our study also found that most Arizona teens (four in five) had weight-related motivations, and one in two specifically desired weight loss. These substantial weight-related motivations are consistent with previous studies identifying adolescence as a critical period for body image development while also experiencing physical changes, exposure to cultural ideas of beauty, and social comparison, which may contribute to body dissatisfaction (Voelker et al. 2015), a known risk factor for UWCBs (Dion et al. 2015).

Congruent with prior research (Watson et al. 2017; Hadland et al. 2014), female and LGBQ+ youth were more likely to describe

TABLE 3 | Adjusted odds ratios (aORs) for unhealthy weight control behaviors (UWCBs) across demographics, weight perception, and desire to control weight.

	Model 1			Model 2			Model 3		
		95% CI			95% CI			95% CI	
Variable	**aOR**	**Lower**	**Upper**	**aOR**	**Lower**	**Upper**	**aOR**	**Lower**	**Upper**
Age									
14 years old or younger	Reference			Reference			Reference		
15 years old	**1.4**	**1.0**	**2.1**	1.4	0.9	2.0	**1.6**	**1.1**	**2.3**
16 years old	**1.8**	**1.1**	**2.8**	**1.8**	**1.1**	**2.9**	**1.9**	**1.3**	**2.7**
17 years old	1.0	0.7	1.4	0.9	0.7	1.3	1.0	0.7	1.5
18 years old or older	1.4	0.7	2.8	1.3	0.5	3.0	1.5	0.7	3.5
Race/Ethnicity									
Non-Hispanic white	Reference			Reference			Reference		
Hispanic	0.8	0.6	1.3	0.8	0.6	1.2	0.7	0.4	1.0
Non-Hispanic multiracial/ others	1.1	0.5	2.3	1.0	0.5	1.9	0.9	0.4	1.0
Sex									
Male	Reference			Reference			Reference		
Female	**4.2**	**3.2**	**5.5**	**3.9**	**2.8**	**5.4**	**3.1**	**2.4**	**4.1**
Sexual orientation									
Heterosexual	Reference			Reference			Reference		
LGBQ+	**2.7**	**2.0**	**3.7**	**2.5**	**1.8**	**3.6**	**2.9**	**2.1**	**4.0**
BMI									
< 95th percentile for BMI[a]	Reference			Reference			Reference		
> = 95th percentile for BMI[a]	1.5	0.8	2.7	0.6	0.3	1.2	0.7	0.4	1.3
Weight perception									
Did not describe themselves as slightly or very overweight				Reference					
Described themselves as slightly or very overweight				**3.8**	**2.7**	**5.2**			

(Continues)

TABLE 3 | (Continued)

	Model 1			Model 2			Model 3		
		95% CI			95% CI			95% CI	
Variable	**aOR**	**Lower**	**Upper**	**aOR**	**Lower**	**Upper**	**aOR**	**Lower**	**Upper**
Weight-related motivations									
Not trying to do anything							Reference		
Trying to gain weight							1.4	0.7	3.0
Trying to lose weight							**9.6**	**4.6**	**20.0**
Trying to stay the same weight							**2.7**	**1.2**	**6.3**

Note: Statistically significant odds ratio estimates are highlighted in bold.
Abbreviations: aORs = adjusted odds ratios; BMI = body mass index; LGBQ+ = lesbian, gay, bisexual, questioning, and other; UWCBs = unhealthy weight control behaviors.
[a]Based on sex- and age-specific reference data from the 2000 CDC growth charts; non-Hispanic Black, non-Hispanic American Indian, non-Hispanic Native American, and non-Hispanic Multiracial were combined due to small sample sizes.

themselves as slightly or very overweight, desire weight loss, and engage in UWCBs than their male and heterosexual peers. In this sample, UWCB prevalence was high across all race/ethnicity groups, yet previous findings indicated that prevalence is highest among Hispanic youth and disproportionately high specifically among Hispanic girls (Beccia et al. 2019). Collectively, this study's and previous findings continue to challenge the prevailing idea that disordered eating only affects "skinny white affluent girls" by revealing how certain groups of teens are disproportionately affected. These disparities are likely driven by socio-structural factors including (1) social biases against body weight, shape, or size, (2) food industry practices that may reinforce "specific reward responses" (Mason et al. 2021; Bray et al. 2022), (3) food insecurity (Hazzard et al. 2020), (4) barriers to accessing mental healthcare (Mauldin et al. 2022; Moreno et al. 2023), and (5) the gendered and racialized nature of beauty ideals (Lowy et al. 2021), each of which have been hypothesized to disproportionately increase disordered eating risk among certain populations in overlapping (e.g., stress-coping pathways) and distinct (e.g., the perpetuation of feast-famine cycles for food insecurity) ways (Goode et al. 2024).

Teens who reported weight-related motivations or perceived themselves to be overweight (regardless of BMI) were more likely to engage in UWCBs compared to their peers who were not trying to do anything about their weight or who did not perceive themselves to be overweight, respectively; those who desired weight loss being nearly 10 times as likely to engage in UWCBs. This is consistent with prior studies that have found associations between attempting weight loss and disordered eating behaviors (Liechty and Lee 2013) (Gusella et al. 2008). Interestingly, teens who were trying to maintain their weight and teens who were trying to gain weight were 2.7 times and 1.4 times more likely to engage in UWCBs than their peers who were not trying to do anything about their weight, which points to any weight-related motivation as being a potential risk factor for UWCBs. These patterns indicate the potential protective effect of health messages focusing on health-promoting behaviors instead of weight or weight loss, which may unintentionally promote UWCBs to control weight.

4.1 | Limitations

This study was limited to data from the Arizona YRBS, as questions assessing UWCBs have not appeared on the national YRBS survey since 2013, resulting in a lack of national-level YRBS data for the last decade. Limitations of the 2021 UWCB question on the Arizona survey include its composite nature and binary response options, including some but not all UWCBs, and a focus on behaviors for weight loss or maintenance purposes. Therefore, the exact type and frequency of listed behaviors are unknown, and overall UWCB prevalence is likely underreported among teens, particularly boys/males who may be more likely to engage in behaviors not listed (e.g., compulsive exercise, steroid use) and for reasons other than weight loss or maintenance (e.g., muscularity-oriented disordered eating) (Murray et al. 2017). Additionally, binge eating, a prevalent disordered eating behavior (Kjeldbjerg and Clausen 2023), was not assessed in the 2021 Arizona YRBS.

Furthermore, BMI was calculated using self-reported height and weight data, which tend to be slightly underreported by high school students, yet self-reported BMI is highly correlated with measured value (Brener et al. 2003) and is a common indicator in large-scale surveys like the YRBS that cannot feasibly collect direct anthropometric data (Fayyaz et al. 2024). Demographic factors, including socioeconomic status, tribal affiliations, and disability status related to UWCBs, were not fully assessed in the YRBS. Further, the 2021 Arizona YRBS included a single item on sex with binary male/female response options, along with a sexual orientation question, excluding the available item assessing gender

identity. Additionally, given the increase in the percentage of LGBQ+ teens from 11.4% in 2013 to 27.2% in 2021, alongside a higher prevalence of UWCBs in this group, it can be beneficial to explore additional data sources to better understand how UWCBs are linked to associated factors in youth with diverse sexual orientations, thus providing a more comprehensive view of the challenges and experiences faced by all.

Lastly, its cross-sectional nature prevented examining UWCB dynamics within individuals or identifying causal risk factors and may have introduced recall, reporting, and/or selection biases (e.g., due to differential response rates across population subgroups).

Despite the representative nature of the Arizona YRBS, subgroups of youth are still not included, and thus, our results may not generalize to them. Because of the nature of the survey and strict protocols of the survey administration, the data did not include teens in homeschools, private or independent schools, or teens who were absent and unable to follow up. The survey required anonymity and independent completion, limiting access to teens with special healthcare needs or language barriers.

4.2 | Public Health Implications

The United States Surgeon General's Advisory on Protecting Youth Mental Health highlights the widespread nature of youth mental health challenges—including those relating to eating disorders and UWCBs—and the moral and medical obligation for government, school, and community organizations to act on systemic change, driving home the message that the best treatment is prevention (Office of the Surgeon General (OSG) 2021).

The public health infrastructures designed to address obesity prevention, nutrition education, and physical activity promotion, however, are significantly more established than any structures currently in place to address disordered eating or the development of positive relationships with food, bodies, and comprehensive health as the goal. Current nutrition education programs funnel to a common goal of eating patterns that mirror federal nutrition guidelines and reaching or maintaining a "healthy" weight. Such approaches include encouraging practices that could unintentionally foster UWCBs such as portion control, categorizing food as good/bad or healthy/unhealthy, compensatory behaviors to offset calorie intake or consumption of specific foods, and stigmatizing health messaging (USDA Food and Nutrition Service 2024; National Heart, Lung, and Blood Institute (NHLBI) 2024; Kansagra et al. 2015). This long-standing obesity-prevention approach to nutrition education conveys physical health and achieving a normal BMI, likely contributing to youth focusing on their weight and desiring weight loss, thus increasing the risk of engagement in UWCBs to achieve this recommendation. This possible cascade within weight-focused direct education and environments must be considered, as the outcome of youth engaging in UWCBs is in direct opposition to the collective goal of protecting and improving youth physical and mental health. With any weight-related motivations being a potential risk factor for UWCBs, public health programs are urged to emphasize the promotion of health behaviors rather than solely focusing on weight.

Past efforts to integrate UWCB prevention activities into federal legislation have been limited and unsuccessful. The Eating Disorder Prevention in Schools Act of 2020 would have required schools to include these activities in local school wellness policies and tasked the United States Department of Agriculture with providing education and technical assistance (House of Representatives 2024). Though the bill was unsuccessful, it notably suggests a pathway to sustainably and systematically integrate UWCB prevention with existing health promotion programs with the potential capacity and infrastructure to support broad implementation.

Previous literature called for action for the full engagement of public health professionals, specifically citing public health departments and schools conducting prevention research and making an impact in the macro environment (i.e., law and policy) (Austin 2012). There needs to be more effort to expand on this concept to specifically and additionally include a call for involvement from public health professionals within state and local health departments who, although they are not positioned to impact law, are well positioned to inform and improve population surveillance, prioritize data dissemination, increase awareness of disordered eating as a public health concern, initiate prevention strategies within community environments, and improve cross-sector collaboration with professionals working in research, treatment, and elementary, secondary, and higher education settings.

Establishing initial capacity for public health-disordered eating prevention within government agencies may include securing state funding and identifying professionals already dedicated to nutrition and physical activity, mental health, prevention, or adolescent and school health initiatives, including registered dietitians, epidemiologists, and professionals involved in health surveillance (e.g., the YRBS) or health promotion in the school setting. Public health departments can explore existing research and their role in taking action to implement universal –selective prevention strategies (Long et al. 2022; Levine and Smolak 2008) to remove risk factors and infuse protective factors, including combating weight stigma in health messaging and curriculum and providing training and resources to school professionals, parents, and the community.

Collaboration across sectors (e.g., government, research, academia, treatment) with varying expertise and areas of influence can increase impact and expand the range of prevention strategies across the Prevention Institute's Spectrum of Prevention (Prevention Institute 2024) such as influencing legislation, promoting community education, or educating providers. Professionals working to advance adolescent health and well-being related to disordered eating prevention can consider the goals outlined in the Health and Human Services Take Action for Adolescents (Office of Population Affairs 2024), reiterating the need for increased coordination across systems and ways to increase youth engagement.

4.3 | Future Research

There is an urgent need for more population-level, epidemiologic research on the magnitude and drivers of differences in UWCBs

among youth from diverse demographic backgrounds and disability statuses. These must be studied using rigorous and inclusive measures that better represent populations who are disproportionately impacted. Future national and state YRBS could include items assessing additional UWCB and disordered eating behaviors (e.g., binge eating), frequency of behaviors, and motivations beyond weight loss or maintenance, to build on the current literature. Additionally, examining risk factors such as appearance-based teasing (Menzel et al. 2010) could provide public health professionals with context to prioritize funding and capacity for prevention initiatives. Research is also needed to examine barriers and facilitators to school-wide YRBS administration (Education Week n.d.), identify digital tools for survey dissemination, understand motivations and effective messaging for key decision-makers, and include teens with complex health needs to ensure fair participation.

In conclusion, our findings highlight the significant weight-related motivations among Arizona youth, with many desiring weight loss, strongly linked to UWCB prevalence. Certain demographic groups, particularly female and LGBQ+ teens are disproportionately affected. Addressing these behaviors requires shifting public health messaging from weight-focused to health-promoting behaviors, enhancing surveillance, inclusive research, and cross-sector collaboration. Improving data collection and addressing socio-structural factors are key to advancing UWCB prevention strategies for all teens.

Author Contributions

Bin C. Suh: conceptualization, formal analysis, methodology, writing – original draft, writing – review and editing. **Ariel L. Beccia:** conceptualization, writing – original draft, writing – review and editing. **Brittany Celebrano:** writing – original draft, writing – review and editing. **Noelle Veilleux:** writing – original draft, writing – review and editing.

Ethics Statement

This study is exempt from human subjects review board approval as the study utilized publicly available data.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data will be made available upon request to the corresponding author.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.