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Original article

## Disordered Weight Management Behaviors, Nonprescription Steroid Use, and Weight Perception in Transgender Youth

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#### ABSTRACT

**Purpose:** Disordered weight management behaviors are prevalent among youth; recent case reports suggested that these behaviors might also be common in transgender youth. We studied associations of gender identity with disordered weight management behaviors, nonprescription steroid use, and weight perception among transgender and cisgender (nontransgender) high-school students in Massachusetts.

**Methods:** Data were analyzed from the 2013 Massachusetts Youth Health Survey, an anonymous survey in a random sample of Massachusetts public high schools. Respondents were divided into three groups: transgender (n = 67), cisgender male (n = 1,117), and cisgender female (n = 1,289). Fisher's exact tests and multivariable logistic regression models were used to examine unhealthy weight management behaviors in the past 30 days: fasting >24 hours, vomiting, diet pill use, and laxative use; nonprescription steroid use; and self-perceived weight status. Analyses controlled for age, race/ethnicity, and body mass index.

**Results:** Compared with cisgender males, transgender adolescents had higher odds of fasting >24 hours (adjusted odds ratio [AOR] = 2.9, confidence interval [CI] = 1.1–7.8), using diet pills (AOR = 8.9, 95% CI = 2.3–35.2) and taking laxatives (AOR = 7.2, 95% CI = 1.4–38.4). Transgender youth had higher odds of lifetime use of steroids without a prescription than male cisgender respondents (AOR = 26.6, 95% CI = 3.5–200.1). Compared with cisgender females, transgender respondents had higher odds of perceiving themselves as healthy weight/underweight when they were overweight/obese (AOR = 2.4, 95% CI = 1.5–4.1).

**Conclusions:** Transgender youth disproportionately self-reported unsafe weight management behaviors and nonprescription steroid use compared with cisgender youth. Clinicians should be aware of this increased risk among transgender youth. Research is needed to further understand these disparities and to inform future interventions.

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## IMPLICATIONS AND CONTRIBUTION

This study explored differences in weight management behaviors and weight perceptions between transgender and cisgender high-school students. In this representative sample, transgender youth had significantly higher odds of unsafe weight managebehaviors ment nonprescription steroid use than cisgender males. Interventions are urgently needed to address these health disparities.

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Disordered weight management behaviors, defined as vomiting after meals, fasting greater than 24 hours to control weight, and diet pill and laxative use, are alarmingly prevalent among high-school students [1–3]. In the United States, more than 26%

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of female students and 10% of male students endorse engaging in these behaviors over the past month [1]. These methods used to try to control weight can have significant health risks, such as electrolyte abnormalities and adverse gastrointestinal consequences [4,5]. Moreover, individuals who engage in disordered weight management behaviors may eventually develop a clinically significant eating disorder (such as anorexia nervosa) or other psychiatric morbidities (such as depression) [1,3]. In addition to behaviors leading to weight loss, body dissatisfaction can result in techniques aimed at body modification, such as anabolic steroid use. Male adolescents who are dissatisfied with their body may use anabolic steroids to increase their lean body mass [6]. Prevalence of lifetime use of steroids without a prescription in high-school students nationally in the United States is 3.6% [7].

Cisgender individuals identify with a gender that is concordant with their sex assigned at birth (nontransgender), in contrast to transgender individuals who identify with a different gender from their sex assigned at birth. Cisgender may be further broken down into cisgender male (natal male sex. identifies as a boy/man) and cisgender female (natal female sex, identifies as a girl/woman). Transgender individuals may identify as female (natal male, male-to-female, transgender girl/ woman), male (natal female, female-to-male, transgender boy/ man), nonbinary (as a gender identity that does not conform to binary male and female gender categories), or elsewhere on the gender spectrum. There can be significant psychological distress that develops for individuals who have a body that does not match their intrinsic sense of gender; [8] however, little is known regarding how this may translate, if at all, to disordered weight management behaviors and eating disorders in transgender people.

Prior research has begun to explore a link between transgender identity and eating disorder diagnosis in adults. A large nationwide survey of college students found that those young adults with a transgender identity had greater odds of having an eating disorder diagnosis in the past year and having disordered weight behaviors compared with cisgender female students [9]. However, not much is known about these behaviors in transgender adolescents, with the only available evidence emerging from case studies [10-12]. These case studies describe how gender dysphoria, which is clinically significant distress due to having a different gender identity than the sex assigned at birth [8,13], may intersect with disordered eating by manipulating weight to appear more like an individual's affirmed gender than their biological sex. Moreover, case studies of two gender fluid adults revealed that eating disorder pathology may change depending on the individual's current gender identity to be either more feminine or more masculine appearing [14]. Qualitative studies in Finnish adults have found that transgender adults (both male-to-female and female-to-male) often selfreport engaging in disordered eating [15]. This may be done to suppress secondary sex characteristics of one's birth sex [16]. For example, being low weighted may reduce "feminine curves" and lead to amenorrhea, which may be desirable for someone who is female-to-male if they are seeking a more masculine body to match their male gender identity. In male-to-female individuals. disordered weight management techniques might be used to reduce muscle bulk and appear more feminine, which may help to affirm a female gender identity. Although these case studies help to provide some insights, population-level and youthoriented studies are lacking.

Longitudinal studies have found that body dissatisfaction in adolescence increases over time and through young adulthood for both males and females [17,18]. Transgender youth may find puberty distressing and have worsening gender dysphoria as they begin to develop secondary sex characteristics of their assigned sex [19-21]. In one study of transgender youth, poor body image and gender dysphoria improved following gender affirming hormone and surgical treatment [22]. However, for transgender youth, the intersection of body satisfaction and gender dysphoria may be more complex than only the distress over the development of secondary sex characteristics. Recent research has found transgender adults may have dissatisfaction with other areas of their body, such as posture, hair, and chest [23]. Moreover, satisfaction with body characteristics that affect how one might be perceived by others as consistent with societal norms of maleness and femaleness (such as muscularity in female-to-male individuals or body shape in both male-tofemale and female-to-male individuals) were associated with overall satisfaction in transgender adults [24]. Qualitative research from older adolescents and young adults found that body dissatisfaction may be related to gender dissociation and body size compared with social norms [25]. It is possible that the body dissatisfaction transgender adults experience may first develop in adolescence and that some of the behavioral and psychological manifestations of such dissatisfaction (such as disordered weight management behaviors) may also emerge during this developmental period for transgender youth.

The aims of this study were to examine differences between transgender and cisgender students in Massachusetts high schools in disordered weight management behaviors, nonprescription steroid use, and perceived weight status. Given the high prevalence of eating disorder behaviors in the adult transgender population compared with the cisgender population, we hypothesized that these behaviors likely begin in adolescence and therefore transgender adolescents would have a higher prevalence of disordered weight management behaviors and nonprescription steroid use than their cisgender peers. Moreover, because the incongruence of their gender identity with their assigned birth sex's secondary sex characteristics may result in body dysphoria, we hypothesized that transgender youth will perceive their weight status differently from cisgender youth.

#### Methods

Sample

The Massachusetts Youth Health Survey (MYHS) is a population-based survey of Massachusetts public high-school students in grades 9–12, conducted by the Massachusetts Department of Public Health in collaboration with the Massachusetts Department of Elementary and Secondary Education [26]. It is an anonymous survey administered in odd-numbered years to randomly selected high schools. For the 2013 survey, all public high schools were eligible and 57 high schools participated in January 2013–May 2013 [27]. The MYHS survey contained a set of core questions that were common to the Centers for Disease Control and Prevention's Youth Risk Health Surveillance System but additionally includes questions related to protective factors and in 2013 included a question on gender identity. Surveys were self-administered by paper and pencil. Data were used from the 2013 survey with the permission of the

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