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Patient-Centered Approaches to Using BMI to Evaluate Gender-Affirming Surgery Eligibility

Whitney Riley Linsenmeyer, PhD, RD, LD and Sarah Garwood, MD

Abstract

Body mass index (BMI) cutoffs are routinely used to assess eligibility for gender-affirming surgeries (GAS), yet they are not empirically based. The transgender population is disproportionately affected by overweight and obesity due to clinical and psychosocial influences on body size. Strict BMI requirements for GAS are likely to cause harm by delaying care or denying patients the benefits of GAS. A patient-centered approach to assessing GAS eligibility with respect to BMI would utilize reliable predictors of surgical outcomes specific to each gender-affirming surgery, include measures of body composition and body fat distribution rather than BMI alone, center on the patient's desired body size, and emphasize collaboration and support if the patient genuinely desires weight loss.

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Assessing Eligibility

The number of transgender patients seeking gender-affirming surgery (GAS) has dramatically increased in recent years.¹ Body mass index (BMI) cutoffs are routinely used to assess eligibility for GAS due to concerns about adverse surgical outcomes.^{2,3,4} Results from the National Surgical Quality Improvement Program revealed that the effect of BMI on surgical outcomes presents the greatest risk to patients with morbid obesity (BMI \geq 40). Commonly cited concerns include increased risk of surgical site infection; cardiovascular risks, such as cardiac arrest and myocardial infarction; and pulmonary complications, such as pneumonia, reintubation, and prolonged ventilator support.^{5,6}

Risks associated with delaying or denying access to GAS are also salient. Gender-affirming medical interventions, including hormone therapy (HT) and GAS, are associated with improved quality of life and decreased levels of anxiety, depression, **gender dysphoria**, and suicidal ideation.^{7,8,9} The eighth version of the World Professional Association of Transgender Health guidelines characterize GAS as “medically necessary” for some patients to alleviate gender dysphoria.¹⁰ Thus, surgeons must consider not only

the risks of the surgery itself, but also the risks to a patient’s health and well-being when GAS are delayed or denied.

The purposes of this article are (1) to review the existing research on BMI as a predictor of GAS outcomes using a mapping review; (2) to discuss weight disparities among the transgender population; and (3) to advance discussion of how to evaluate patients’ eligibility for GAS with particular attention to their body size in light of calls for a “multimodal, human-centered approach” to addressing risk factors for GAS.²

Results of a Mapping Review

Table 1 provides brief definitions of various chest and genital GAS.

Table 1. Brief Definitions of Gender-Affirming Surgeries	
Surgical Procedure	Definition
Masculinizing Surgery	
Hysterectomy	Removal of the uterus
Implantation of erection prosthesis	Addition of a penile implant, often as part of a phalloplasty
Mastectomy or chest reconstruction	Removal of breast/chest tissue
Metoidioplasty	Creation of a penis using existing genital tissue
Ovariectomy or oophorectomy	Removal of one or both ovaries
Phalloplasty	Creation of a penis
Scrotoplasty	Creation of a scrotum
Vaginectomy	Removal of all or part of the vagina
Feminizing Surgery	
Augmentation mammoplasty	Increase in breast/chest size
Clitoroplasty	Creation of a clitoris
Orchiectomy	Removal of one or both testicles
Penectomy	Removal of a penis
Vaginoplasty	Creation of a vagina using existing genital tissue
Vulvoplasty	Creation of a vulva

To review existing research on BMI as a predictor of GAS outcomes, we conducted a mapping review of the available literature published through July 1, 2022. A mapping review is ideal to categorize existing literature, identify gaps, and guide further research.¹¹ We searched the Scopus database using queries with keywords: the name of the surgical procedure (eg, mastectomy) AND body mass index OR obesity OR body weight AND transgender. Studies were screened to remove those that reported BMI or weight status in the sample population but did not evaluate the role of BMI in predicting GAS outcomes.

Table 2 presents a summary of the articles retrieved from our search. In total, 11 studies explored the role of BMI in predicting chest and genital GAS outcomes.

Table 2. Summary of Studies That Investigated the Role of BMI on Predicting Breast/Chest and Genital GAS Outcomes

Surgical Procedure	Studies	Study Design	Results
Masculinizing GAS^a			
Mastectomy, chest reduction, or musculoplasty	Cuccolo (2019) ¹²	Retrospective chart review of 755 patients	Obesity was more prevalent among patients who underwent breast/chest reduction compared to those who underwent a mastectomy, but complication rates did not differ between the two cohorts.
	Knox et al (2017) ¹³	Retrospective chart review of 101 patients	Concentric circular technique presented greater risk of complications compared to free nipple graft technique in patients with a BMI > 27 kg/m ² and additional factors.
	Pittelkow (2020) ¹⁴	Retrospective chart review of 145 patients	Postoperative infections were significantly increased in patients with morbid and super obesity, but not in patients with obesity.
	Rothenberg (2021) ¹⁵	Retrospective chart review of 948 patients	There were no significant differences in complications or revisions between patients with obese versus those with a normal BMI.
	Stein (2021) ¹⁶	Retrospective chart review of 97 patients	Minor and major complication rates did not differ between patients with obesity and those without obesity
Hysterectomy	Ferrando (2021) ¹⁷	Retrospective chart review of 67 patients	BMI was not associated with increased incidence of intraoperative endometriosis or heavy bleeding.
Metoidioplasty	Watershoot (2021) ¹⁸	Retrospective chart review of 74 patients	BMI was not a predictor of complications.
Feminizing GAS^b			
Vaginoplasty	Buncamper (2016) ¹⁹	Retrospective chart review of 475 patients	BMI was not associated with complications.
	Gaither (2018) ²⁰	Retrospective chart review of 330 patients	BMI was not associated with complications.
	Ives (2019) ²¹	Retrospective chart review of 101 patients	BMI was not associated with delayed revision urethroplasty or complications.
All GAS			
Procedure type not specified	Scott (2022) ¹	Analysis of American College of Surgeons NSQIP Data	BMI was positively associated with an increased risk for having at least one complication.

Abbreviations: GAS, gender-affirming surgeries; BMI, body mass index; kg, kilograms; m, meters; NSQIP: National Surgical Quality Improvement Program

^a No studies retrieved on ovariectomy/oophorectomy, phalloplasty, vaginectomy, scrotoplasty, or implantation of erection and/or testicular prostheses.

^b No studies retrieved on clitoroplasty, vulvoplasty, augmentation mammoplasty, penectomy, or orchiectomy.

Five studies focused on masculinizing chest surgeries, such as mastectomy, breast reduction, or musculoplasty.^{12,13,14,15,16} An obese BMI (≥ 30) did not increase the risk of complications in 4 of the 5 chest reconstruction studies.^{12,14,15,16} Pittelkow et al found that postoperative infection risk was higher in mastectomy patients with morbid obesity (BMI ≥ 40) and super obesity (BMI ≥ 50).¹⁴ BMI was not associated with complications in studies of hysterectomy,¹⁷ metoidioplasty,¹⁸ and vaginoplasty.^{19,20,21} Among all forms of gender-affirming surgery, BMI was associated with a very slight increased risk for complications in Scott et al's study that relied on American College of Surgeons National Surgical Quality Improvement Program data, although the findings were not reported by BMI classification, type of gender-affirming surgery, or the nature of the complication.¹

The studies identified in this literature review have several limitations. Because existing research is limited to 4 common GAS, future research should address BMI as a predictor of outcomes in all forms of gender-affirming surgery. A second limitation is that because BMI cutoffs were routinely used to determine GAS eligibility when some of the studies were performed,^{2,4} patients with higher classes of obesity might not have been included in the study samples. Thus, further research should explore BMI as a predictor of GAS outcomes in patients with class I, II, and III obesity, similar to the work of Rothenberg et al¹⁵ and Pittelkow et al,¹⁴ and in patients with an underweight BMI (< 18.5).

Weight-Related Inequity

A patient-centered approach to evaluating GAS eligibility with respect to BMI requires consideration of multiple influences on body weight and obesity risk. Transgender individuals are more likely to be affected by overweight and obesity than nontransgender individuals secondary to clinical and psychosocial factors.^{22,23,24,25} For example, masculinizing and feminizing HT result in estimated increases in body weight of 1.7 kg and 1.8 kg, respectively,²⁶ with case reports of up to 27.3 kg of weight gain.²⁷ Anticipated weight gain with HT increases the likelihood that a patient's BMI would exceed predetermined limits for GAS. In addition, the transgender population is disproportionately affected by nutrition-related conditions, such as **food insecurity** and eating disorders,^{28,29,30,31,32} both of which are associated with an increased obesity risk in certain population groups.^{33,34,35} The transgender population is also significantly less physically active than the cisgender population due to fear of being "outed" as transgender, "passing" as male or female, and body dissatisfaction, among other factors.^{36,37,38,40,41,42,43,44} Although obesity is a complex disease, physical inactivity is a known risk factor.²⁵

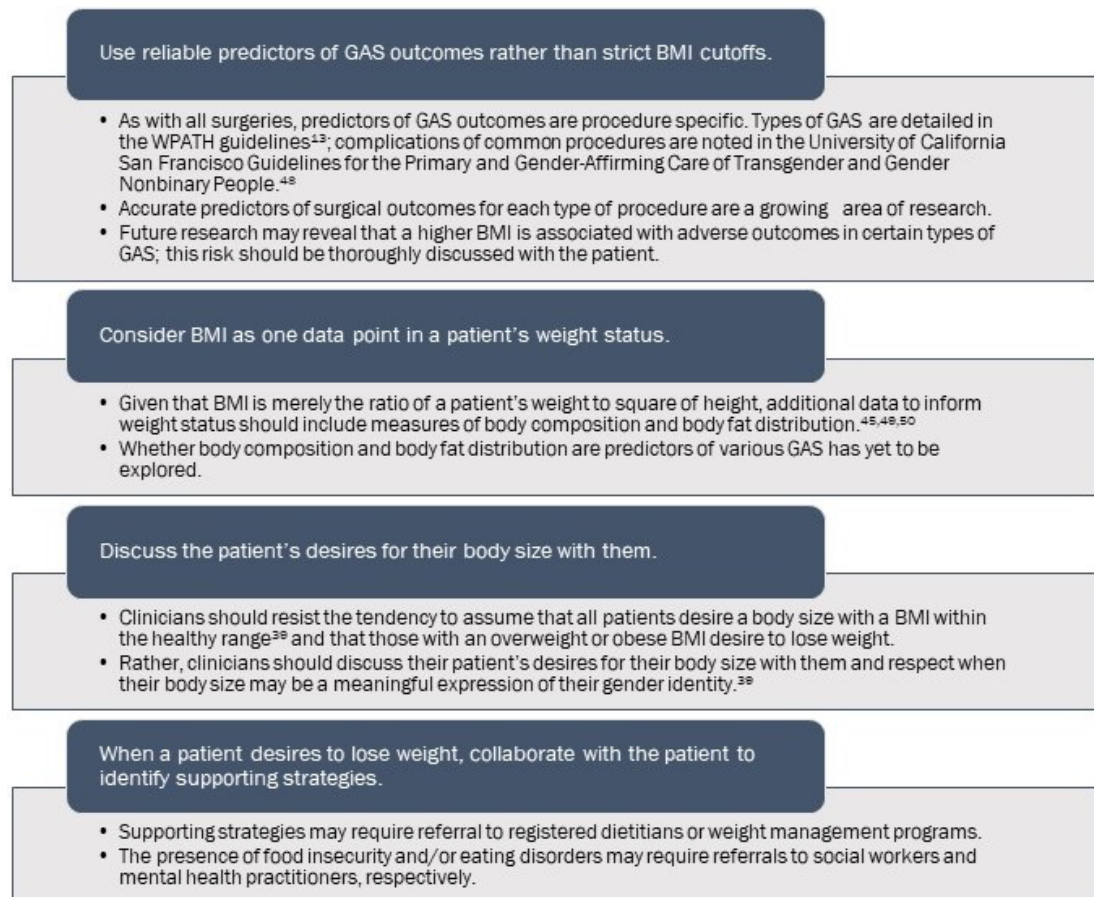
A Patient-Centered Approach

Although the terms *obese* and *obesity* have been used throughout this paper when describing the results of existing research reliant on Centers for Disease Control and Prevention BMI ranges, we recognize that obesity as a medical diagnosis lacks sensitivity to body size diversity. Strict BMI requirements for GAS and routine weight loss recommendations also neglect a fundamental consideration: the patient's own desire for their body size. The hegemonic assumption is that all patients desire a body size that is within the "healthy" BMI range of 18.5-24.9 as defined by the Centers for Disease Control and Prevention,³⁹ despite the known limitations of BMI as a predictor of adiposity and health outcomes.⁴⁵ Whether the patient with a BMI classified as overweight or obese genuinely desires a smaller body size, however, is not routinely considered. Notably, the patient's desire for their own body size does not change the risks associated with GAS, but it is relevant to the provision of patient-centered care.

Body size and shape may be an expression of a patient’s authentic gender identity. The first author (W.L.) and a colleague have related the narrative of a transgender man who genuinely desired a larger body size—which he described as “having more of a presence,” “filling out my space,” and “going from invisible to visible”—when he decided to transition.⁴⁶ Although clinicians would label his body as obese, his larger body size was an expression of his masculinity.⁴⁶ Importantly, emerging research suggests that prescribing weight loss for patients seeking GAS is not only ineffective but also may cause harm by propagating weight cycling and weight stigma.^{2,47} Thus, while many patients with overweight or obesity may genuinely desire a smaller body size, the reflexive assumption that all patients are dissatisfied with their body size lacks sensitivity to patients’ goals and gender expression.

A patient-centered approach to assessing GAS eligibility with respect to BMI would be empirically driven and center on the patient’s goals for their body. Toward this end, clinicians can employ the strategies depicted in the Figure.

Figure. Patient-Centered Approach to Use of Body Mass Index in Evaluating Gender-Affirming Surgery Eligibility



Abbreviations: BMI, body mass index; GAS, gender-affirming surgery; WPATH, World Professional Association for Transgender Health.

Conclusion

The use of BMI cutoffs to determine GAS eligibility is an oversimplified and unsubstantiated practice. Given that transgender individuals are disproportionately affected by obesity, strict BMI requirements for GAS are likely to harm a significant number of patients by delaying or denying the benefits of GAS. A patient-centered approach to assessing GAS eligibility with respect to BMI would utilize reliable predictors of surgical outcomes specific to each gender-affirming surgery, include measures of body composition and body fat distribution rather than BMI alone, center on the patient's desires for their body size, and emphasize collaboration and support if the patient genuinely desires weight loss. Further research is needed to determine reliable predictors of various GAS.

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Whitney Riley Linsenmeyer, PhD, RD, LD is an assistant professor of nutrition at Saint Louis University in St Louis, Missouri, and a spokesperson for the Academy of Nutrition and Dietetics. Her research and clinical practice center on nutrition care for the transgender population.

Sarah Garwood, MD is an associate professor of pediatrics at Washington University School of Medicine’s Division of Adolescent Medicine and co-director of the Washington University Transgender Center at St Louis Children’s Hospital in Missouri. She also serves as medical director of The SPOT at Jennings High School, the first comprehensive school-based health center in St Louis County.

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