

Study suggests body mass index isn't obstacle to chest masculinization surgery eligibility

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Body mass index, or BMI, is a person's mass (weight) in kilograms divided by the square of their height in meters. Since it was first developed in the 1970s, BMI has been used to broadly categorize people

as underweight, normal weight, overweight and obese, and in turn, help assess an individual's current health and predict future outcomes.

However, for people who are transgender and nonbinary seeking gender affirming [surgery](#), BMI may not be an appropriate means of determining who should be eligible.

In what is believed to be the largest study of the association between BMI and postoperative complications following chest masculinization surgery (CMS, also known as top surgery), researchers at the Johns Hopkins Center for Transgender and Gender Expansive Health (CTH) provide evidence that BMI is a poor metric for determining who should be approved for the gender transitioning procedure.

The findings were first [reported](#) in the *Annals of Plastic Surgery*.

"Traditional BMI requirements related to top surgery have been highly surgeon specific, not standardized and only based on studies with small sample sizes," says study lead author Bashar Hassan, M.D., a postdoctoral research fellow in plastic and reconstructive surgery at the CTH and the University of Maryland Medical Center's R Adams Cowley Shock Trauma Center.

"Despite the lack of solid evidence showing an association between a high BMI and serious postoperative complications in chest masculinization—such as [blood clots](#), bleeding and infection—many people who are transgender and nonbinary get denied the surgery."

To determine if the BMI barrier was appropriate, the CTH team reviewed demographics, operative procedures and [postoperative complications](#) for 2,317 people who are transgender and non-binary, and who underwent CMS (as a primary surgery and not concurrently with another procedure) between 2012 and 2020.

Data were obtained from the National Surgical Quality Improvement Program, a risk-adjusted, nationally validated database managed by the American College of Surgeons to help researchers improve the quality of surgical care.

The CTH researchers divided BMI scores into six groups: category 0, BMI less than 30 kilograms per meter squared (kg/mg^2); category 1, BMI between 30 and 34.9 kg/mg^2 ; category 2, BMI between 35 and 39.9 kg/mg^2 ; category 3, BMI between 40 and 44.9 kg/mg^2 ; category 4, BMI between 45 and 49.9 kg/mg^2 ; and category 5, BMI greater than or equal to 50 kg/mg^2 .

The [median age](#) of those studied was 25, and the median BMI was 27 kg/mg^2 . Nearly two-thirds (1,501 or 64.8%) were not obese (BMI below 30 kg/mg^2), but those who were (816 or 35%) still constituted a significant proportion. Finally, a small number (26 or 1.1%) had a BMI greater than 50 kg/mg^2 .

Hassan explains that the previous studies used to set CMS eligibility criteria rarely included people with very high BMIs. "In contrast, our study evaluated one of the largest groups of CMS patients who belong to the morbidly obese and super obese categories," he says.

The team investigated how many people within the [study group](#) developed at least one [complication](#) within 30 days of their surgery, both major and minor.

Major complications included [cardiac arrest](#) requiring [cardiopulmonary resuscitation](#), [myocardial infarction](#) (heart attack), stroke, [acute renal failure](#), unplanned intubation, pulmonary embolism (blood clot in the lungs), deep venous thrombosis (blood clot in the leg, groin or arm), sepsis (widespread infection), septic shock, bleeding requiring transfusion, unplanned second operation, unplanned hospital readmission

within 30 days, or an original hospital stay that is prolonged.

Minor complications included surgical site infection, urinary tract infection, pneumonia and wound disruption not associated with an unplanned second operation.

"We found that people with high BMIs did have a slightly increased risk of complications across the board, but that the risk for serious complications—those that were life threatening—was very low," says study senior author Fan Liang, M.D., CTH medical director and assistant professor of plastic and [reconstructive surgery](#) at the Johns Hopkins University School of Medicine.

The researchers found that people in the category 3 BMI group had greater odds of hospital readmission and surgical site infections compared with those who were not obese. Among the members of the category 5 BMI group, the findings showed greater chance of developing at least one complication (especially urinary tract infections).

However, Hassan and Liang say that while increasing BMI was significantly associated with greater odds of at least one postoperative complication, no one in the study group experienced severe health problems, regardless of BMI.

"Given that our large-scale study strongly suggests such a low risk for severe complications following CMS in people with high BMIs, we recommend that the medical community reevaluate its current approach of BMI cutoffs for CMS eligibility," says Liang.

More information: Bashar Hassan et al, Association of High Body Mass Index With Postoperative Complications After Chest Masculinization Surgery, *Annals of Plastic Surgery* (2023). [DOI: 10.1097/SAP.0000000000003737](https://doi.org/10.1097/SAP.0000000000003737)

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