

Binary and Nonbinary Transgender Patient Experiences Accessing Gender-affirming Top Surgery

Gavin A. Raner, HBSc*
 Jordan S. Shapiro, HBA, HBMSc*
 Tiffany Tse, BHSc†
 Kathleen Armstrong, MD, MSc,
 FRCSC‡
 Emery Potter, NP‡

Background: Transgender and gender diverse (TGD) individuals face barriers when seeking top surgery, or bilateral mastectomies, as part of surgical transition, leading to delayed care and adverse health outcomes. Understanding differential experiences between nonbinary and binary patients is crucial for improving TGD patient care, but this distinction is seldom made in the current literature.

Methods: This single-center cross-sectional mixed-methods survey study conducted between 2022 and 2023 enrolled all consecutive TGD patients undergoing top surgery. Significant differences between datasets were determined by two-sample unpaired *t* tests. Summative content analysis and descriptive analysis were performed for free-text responses.

Results: Thirty-seven binary and 71 nonbinary patients completed the survey. Lack of funding, long wait times within the healthcare system, and long wait times to access surgery were the three most impactful barriers for both cohorts. Nonbinary patients were more impacted by a lack of TGD-friendly surgeons and community physicians, prejudice from surgical center staff and community doctors, and employment concerns. More binary patients desired a “masculine chest” and to stop using a binder. The nonbinary group more frequently desired a “smaller chest” and had greater variability of surgical goals.

Conclusions: Binary and nonbinary TGD patients both experience barriers to top surgery; however nonbinary patients may experience distinct barriers and have differential surgical goals. It is important to discuss specific surgery goals and offer top surgery options beyond bilateral mastectomy with nipple grafting, especially with nonbinary patients. (*Plast Reconstr Surg Glob Open* 2024; 12:e6198; doi: 10.1097/GOX.0000000000006198; Published online 4 October 2024.)

INTRODUCTION

Surgical transition is achieved through gender-affirming surgery (GAS), recognized as medically necessary procedures by the World Professional Association for Transgender Health.¹ Within the transgender and gender diverse (TGD) umbrella, some gender identities fall within the “gender binary” (ie, “man” or “woman”),

whereas others are “gender diverse” or “nonbinary.” Although important discourse currently exists regarding this terminology, the current article will use “nonbinary” as the umbrella term to incorporate all gender identities that fall outside the binary identities of “(cis/trans) man” and “(cis/trans) woman.” The most common GAS among TGD individuals who were assigned female at birth is “top surgery,” which typically involves bilateral mastectomies ± nipple grafting ± contouring. Despite being medically necessary and highly desired by transmasculine individuals, patients seeking top surgery continue to experience significant barriers to accessing care, including prejudice, lack of social supports, financial stability, and lack of physicians who are educated about or comfortable providing care for TGD patients.²

As the medical community’s understanding of transgender healthcare has grown in recent years, the literature

From the *Schulich School of Medicine and Dentistry, Western University, London, Canada; †Temerty Faculty of Medicine, University of Toronto School, Toronto, Canada; and ‡Transition Related Surgery Program, Division of Plastic and Reconstructive Surgery, Women’s College Hospital, Toronto, Canada.

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Raner and Shapiro contributed equally to this work.

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on nonbinary-specific healthcare and patient experiences remains sparse. Specifically, understanding the medical experiences of nonbinary patients with respect to surgical transition is a highly necessary direction of investigation.³ Moreover, it is recognized that the current field of GAS is largely centered around the gender binary, which creates a need for closer examination and comparison of nonbinary and gender diverse individuals.⁴

The current body of literature on TGD health often does not generalize binary and nonbinary identities, although more recent studies are beginning to do so.⁵ Such studies tended to show greater health disparities in nonbinary populations.⁶ At the primary care level, it has been shown that nonbinary patients are disproportionately affected by a lack of understanding of their identities and experiences from healthcare providers.⁷ At the surgical care level, a recent literature review showed differential surgical preferences in terms of nipple size and placement between binary and nonbinary patients.⁸ We believe more insight in regards to patient access, surgical goals, and interactions with the surgical center is crucial for guiding improvements to top surgery access and GAS infrastructure at large. Therefore, the aim of our mixed-methodology survey was to further characterize, compare, and contrast the experiences of binary and nonbinary TGD patients undergoing top surgery.

METHODS

Study Design

A single-center cross-sectional survey study was conducted at Women's College Hospital in Toronto, Canada. Women's College Hospital is one of two major providers of gender-affirming surgery in Ontario, performing approximately 180 top surgery procedures per year. The survey was developed by members of the research team who have lived experience as TGD individuals and incorporated relevant questions based on existing literature, such as common barriers to accessing top surgery and anonymous feedback from study participants within the first month of study launch.² The study and survey were approved by the hospital's research ethics office before study initiation.

Eligible participants included all assigned-female-at-birth gender-affirming top surgery patients who received their preoperative consultation between January 2022 and January 2023. They were consented to participate during this preoperative consultation appointment, and subsequently contacted by email to complete the survey, which was completed privately in their own time to reduce bias. All participants ultimately underwent top surgery. The data were then cross analyzed with participant demographics to identify any differential barriers between subgroups, particularly that between patients with binary versus nonbinary identities.

Study Procedures

The survey consisted of six sections with a total of 47 optional questions, incorporating a mixture of

Takeaways

Question: What are the experiences of transgender and gender diverse patients seeking top surgery, and how do they compare between binary and nonbinary individuals?

Findings: Binary and nonbinary patients experience barriers to top surgery, but those experienced by nonbinary patients more often involve prejudice and poor representation. Nonbinary patients also have greater variability in surgical goals.

Meaning: When offering top surgery, it is important to understand the nonbinary identity and its distinctness from binary transgender identities. Discussing specific surgery goals and offering top surgery options beyond bilateral mastectomy with nipple grafting is critical.

single-select, multi-select, and textbox response formats (See survey, **Supplemental Digital Content 1**, which shows the six-section survey used in this study. <http://links.lww.com/PRSGO/D525>). The sections were: "Demographics"; "Engaging with the Self," relating to one's initial interest in top surgery; "Engaging with the Community Healthcare System," relating to one's nonsurgical care team; "Engaging with the Government and Funding"; "Engaging with the Surgical Center"; and "Barriers." Demographic data was collected, which included sex assigned at birth, self-identified gender, self-identified ethnicity, self-identification as a person of color. Ethnoracial data were collected for an intersectional lens of data analysis, as racialized individuals disproportionately experience healthcare disparities as well.^{9,10} Both quantitative and qualitative data were collected. This data included experiences with funding pathways, surgical goals, barriers experienced, perceived shortcomings of the current top surgery landscape, and suggestions for improvement to the current top surgery care model. To reduce bias, the survey only asks participants about barriers if they respond "yes" when asked whether they feel they experienced any barriers in their top surgery journey.

Study data were collected via an electronic data capture tool called Research Electronic Data Capture (REDCap).^{11,12} REDCap is a secure, web-based software platform designed to support data capture for research studies, providing (1) an intuitive interface for validated data capture; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures for seamless data downloads to common statistical packages; and (4) procedures for data integration and interoperability with external sources. All survey responses were anonymized and kept confidential within the team of investigators.

Sample Size

We aimed for an ideal sample size of 100 viable datasets for analysis with at least 14 nonbinary participants, as this was a previously reported proportion of nonbinary individuals within the top surgery patient population.¹³

Statistical Methodology

This study used mixed methodology.¹⁴ Unpaired *t* tests were performed to assess for any differences between the binary group versus the nonbinary group regarding discrete responses. Significance was defined as a *P* value less than or equal to 0.05 and a confidence interval that does not span the number zero. Missing data points were excluded from analysis. All statistical analyses were conducted in RStudio.¹⁵ Qualitative analysis involved summative content analysis and descriptive analysis of free-text responses.¹⁶

RESULTS

Demographics

Of 145 surveys sent, a total of 108 completed responses were received, with 37 patients self-identifying as binary transgender and 71 as nonbinary. This entails a satisfactory response rate of 74%. The demographic factors between the two groups were overall comparable (Table 1). The main differences were that significantly more binary patients were receiving gender-affirming hormone therapy compared with nonbinary patients [95% versus 51%, 95% confidence interval (CI) -0.58% to -0.30%; *P* < 0.001].

As well, the nonbinary patient group was slightly older at the time of surveying (30.90 ± 9.6 versus 25.54 ± 8.2 years old respectively, 95% CI, 1.85%–8.87%; *P* = 0.003) and had higher median education level (bachelor’s degree versus high school diploma; 95% CI, -1.32% to -0.56%; *P* < 0.001), median personal income (\$20k–30k versus \$10k–15k; 95% CI, 0.66%–2.88%; *P* = 0.002), and median family income (\$60k–80k versus \$30k–40k; 95% CI, 0.25%–2.93%; *P* = 0.02; Table 2). There was no difference in terms of having comorbidities, having disabilities, not speaking English as a first language or self-identifying as a person of color.

Surgical Goals

The survey collected discrete and qualitative data regarding surgical goals with 64 nonbinary and 35 binary respondents. Five specific goals were listed as discrete data, namely “flat chest,” “masculine chest,” “stop binding,” “smaller chest,” and “no specific goal” (Fig. 1). Significantly more binary patients desired a masculine chest (95% CI, 0.19–0.53; *P* < 0.001) and to stop binding,

or stopping the use of a chest binder (95% CI, -0.15 to -0.02; *P* = 0.01). Significantly more nonbinary patients versus zero binary patients desired a smaller chest (95% CI, 0.03–0.41; *P* = 0.02). Four nonbinary and zero binary patients had no specific goal (95% CI, -0.11 to -0.001; *P* = 0.05). Both groups equally desired a flat chest (95% CI, -0.25 to 0.14; *P* = 0.5).

Seven binary and 27 nonbinary patients entered free-text responses regarding their surgical goals (Fig. 2). All binary responses desired a masculine chest and 71% desired to “pass.” Nonbinary patients expressed more variable and differential surgical goals.

Barriers

Both cohorts experienced barriers; however, significantly more nonbinary patients encountered barriers (73% versus 50%; 95% CI, 0.02–0.44; *P* = 0.03; Table 1). A total of 71 nonbinary and 37 binary respondents elaborated on their barriers. The 2 groups similarly ranked the 3 most impactful barriers as “lack of funding or high cost,” “long wait times within the healthcare system” before surgical referral, and “long wait times to access surgery” after referral (Fig. 3). Nonbinary patients were disproportionately affected by difficulty finding a TGD-competent community physician (95% CI, -3.88 to -0.91; *P* = 0.002), lack of TGD-competent surgeons (95% CI, -2.40 to -0.38; *P* = 0.008), prejudice and/or unfair treatment from surgical center staff (95% CI, -3.51 to -0.39; *P* = 0.02), community healthcare providers (95% CI, -2.67 to -0.11; *P* = 0.03), and employment concerns (95% CI, -4.28 to -0.79; *P* = 0.005).

Significantly fewer nonbinary patients found the available top surgery information and resources personally applicable (68% nonbinary versus 89% binary; 95% CI, -0.39 to -0.03; *P* = 0.02; Tables 2 and 3). The top 3 reasons were that the resources did not represent their body type (55%), gender identity (50%), and surgical goals (41%).

Only 91% of nonbinary patients were able to access all the different types of healthcare providers they wanted to, compared to 100% of the binary cohort (95% CI -0.16 to -0.02; *P* = 0.01). Patients identified a lack of primary care providers comfortable with gender-affirming care, endocrinologists, psychiatrists, and any physicians who have lived experience as 2SLGBTQ+.

Table 1. Demographic Information between Nonbinary and Binary Cohorts

Demographic Information	Nonbinary (n = 71)	Binary (n = 37)	<i>P</i>	95% CI
Age (mean ± SD)	30.9 ± 9.6	25.5 ± 8.2	0.003	1.85–8.87
On hormone therapy	51% (36/71)	95% (35/37)	<0.001	-0.58 to -0.30
Has comorbidities	22% (13/71)	9% (3/37)	0.09	-0.02 to 0.28
Has disabilities	55% (39/71)	68% (25/37)	0.42	-0.44 to 0.19
English as a second language	1% (1/71)	3% (1/37)	0.67	-0.05 to 0.07
Person of color	10% (7/71)	6% (2/71)	0.23	-0.19 to 0.05
Experienced barriers	73% (46/71)	50% (17/37)	0.03	0.02–0.44
Geographical barrier	31% (21/71)	36% (13/37)	0.60	-0.25 to 0.15

Table 2. Socioeconomic Information between Nonbinary and Binary Cohorts

Socioeconomic Information	Nonbinary (n = 71)	Binary (n = 37)	P value	95% CI
Level of education	Bachelor's	High school	<0.001	-1.32 to -0.56
Personal income	\$20–30k	\$10k–15k	0.002	0.66–2.88
Household income	\$60k–80k	\$30–40k	0.02	0.25–2.93
Government insurance	93%	94%	0.86	-0.12 to 0.10
Private insurance	17%	30%	0.18	-0.32 to 0.06
Additional funding	29%	29%	0.97	-0.20 to 0.19
Funding application issues	17%	10%	0.35	-0.08 to 0.23
Paying out of pocket	98%	94%	0.34	-0.05 to 0.13

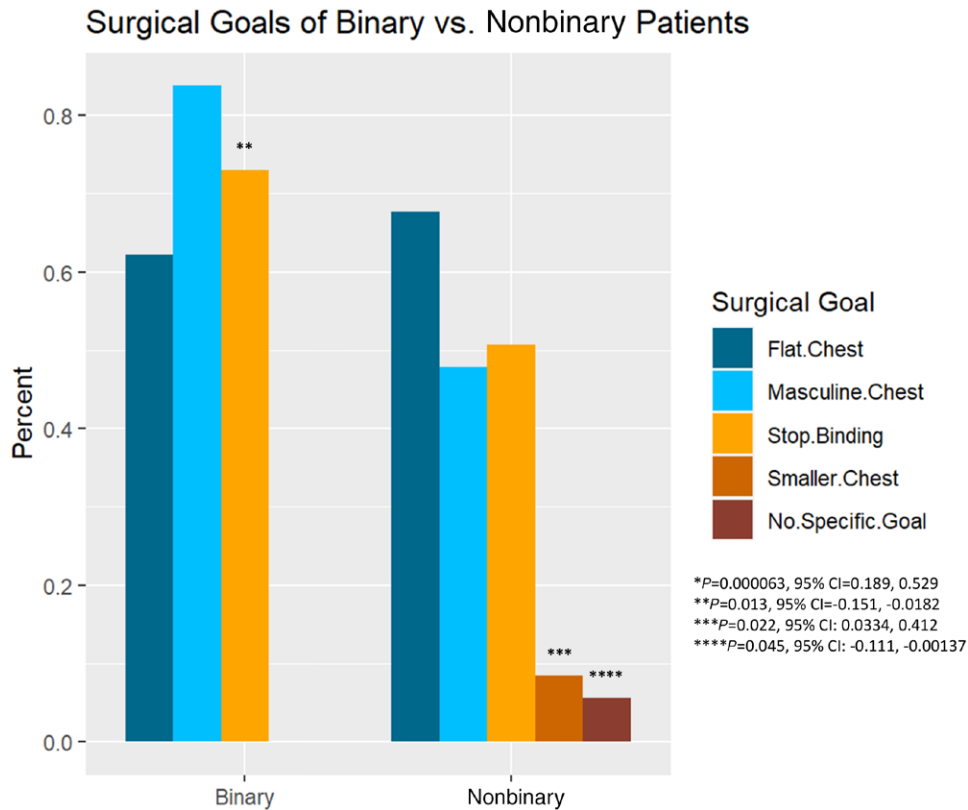


Fig. 1. Graph showing differential surgical goals between binary (left) vs nonbinary (right) TGD patients. Significant between-group differences are denoted with asterisks over the bar of greater value. * $P = 0.000063$; 95% CI, 0.189–0.529. ** $P = 0.013$; 95% CI, -0.151 to -0.0182. *** $P = 0.022$; 95% CI, 0.0334–0.412. **** $P = 0.045$, 95% CI -0.111 to -0.00137.

Thirty-nine patients (n = 32 nonbinary, n = 7 binary) entered free-text responses regarding barriers they faced (Fig. 4). Here, both cohorts endorsed facing barriers relating to financial support, physician education and supportiveness, strict body mass index criteria, disability or comorbidity, funding wait time, and surgical wait time. Three barriers uniquely endorsed by nonbinary patients related to communication and transparency, public education and supportiveness, and transportation.

Seventy patients entered free-text responses for suggested improvements to the top surgery system (Fig. 5). Both cohorts expressed desire for increased financial support, improved physician education and supportiveness, better accommodation for disabilities or comorbidities, simplified application process, reduced wait times, better

communication and transparency, improved public education and supportiveness, transportation support, more GAS programs and surgeons, and more social support systems. Two items were uniquely expressed by nonbinary patients: eliminate body mass index criteria, and more patient autonomy.

DISCUSSION

Overall, the nonbinary and binary cohorts were demographically comparable, except the nonbinary patients tended to be older, with the average age being around 31 versus 26. This small difference in average age may reflect the fact that nonbinary individuals often require a longer journey from self-discovery to reaching surgical

Binary Sample Responses	Surgical Goal	Nonbinary Sample Responses
"I wanted a chest to look like a normal cis-male."	Cisgender-passing	--
"I wished to have a flat, traditionally masculine, looking chest. Specifically for me that also included smaller nipples and areolas." "My breasts are quite large and give me a lot of gender dysphoria and body dysmorphia. I want to look more traditionally masculine and have a flat/masculine chest."	Masculinity	"A masculine chest that looks muscular and buff."
	Reduce dysphoria	"I want my chest to appear the way I already 'see' it and allow me to move through the world in the way I already expect to be moving through it."
	No breasts	"Simply to remove my breasts."
	Small nipples	"I wanted a non-binary chest with small nipples."
--	Small breasts	"To keep some breast tissue while still making my breasts as small as possible."
--	No nipples	"No nipple grafts or anything. Having nothing but flatness is what best aligns with my identity."
--	Androgyny	"I wanted a flat chest that was non-binary and androgynous. Not masculine or muscular since I am not trans-male nor on testosterone."
--	Fluidity	"Keep some tissue for use with a pushup bra on femme days, and to safely bind my chest on masculine days."
--	Reduce femininity	"I wanted to remove the feature that makes people call me 'miss' immediately despite my beard. "
--	Reduce sexualization	"I didn't like the gendered sexualization that accompanied the appearance of cleavage."
--	Comfort	"Be more physically and mentally comfortable in my body."
--	Safety	"I want to feel safer in public."
--	Minimal scarring	"Symmetrical/minimal scarring."
--	Visible scarring	"To have visible scars."
--	None	"I didn't have an outcome in mind... I didn't know what it was going to look like because I'm not represented"

Fig. 2. Table showing sample free-text responses for binary (left) vs nonbinary (right) patients in response to the prompt "If you wish to do so, please elaborate on the outcome you had in mind." For goals with no endorsers in one patient group, "--" denotes a null value.

care, compounded by the many factors identified in this study including a lack of representation in the available top surgery resources, lack of understanding and support from healthcare providers and family, and a lack of awareness that nonbinary options for top surgery exist beyond bilateral mastectomy with free nipple grafting. The older age and higher income may be why nonbinary patients reported significantly greater impact from employment concerns such as taking time off work. More established financial commitments may make time off for surgical recovery less feasible.

The nonbinary cohort (n = 71) was more populous than the binary cohort (n = 37), which is a higher proportion than the 13% previously described for gender-affirming top surgery patient populations.¹³ Several factors likely contributed to this. Firstly, the "13%" from literature referred to the proportion of nonbinary patients in the top surgery population, but the proportion of nonbinary individuals in the community is often much higher, such as an estimated 40% in Canada.¹⁷ It may be that more nonbinary patients are now seeking top surgery than before. As well, many nonbinary participants

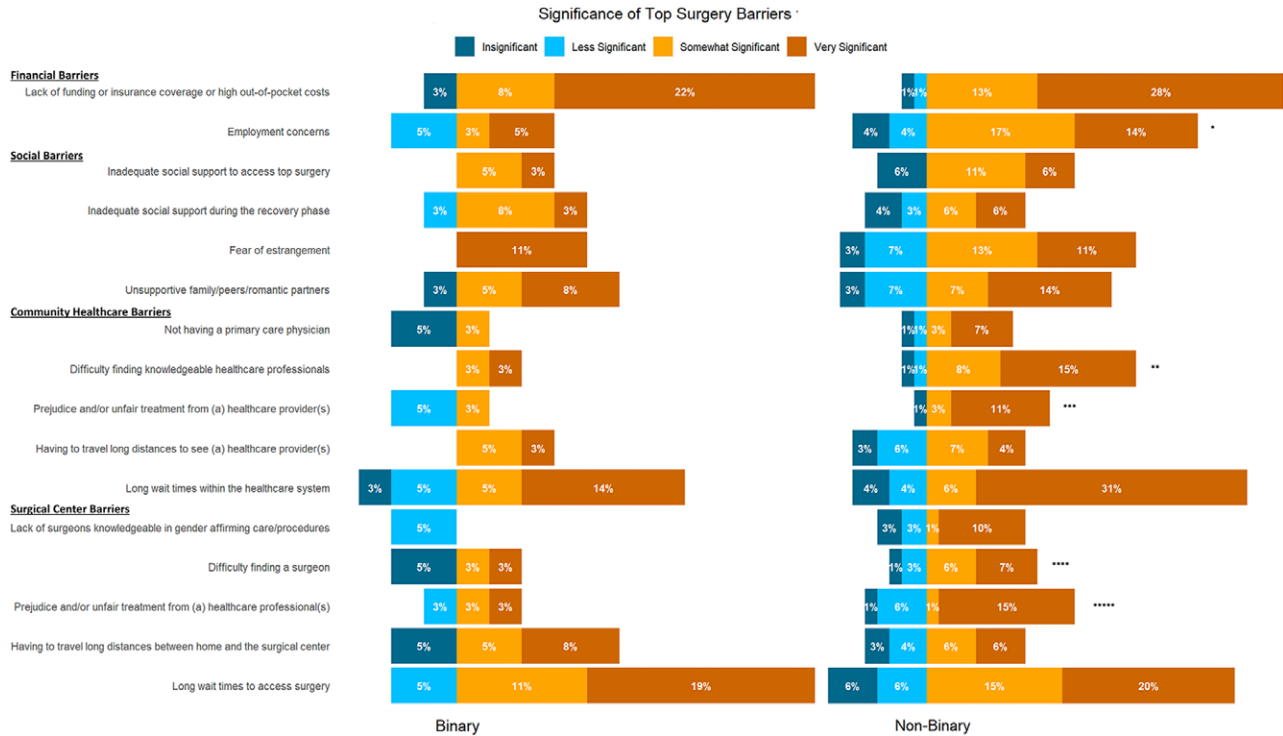


Fig. 3. Graph showing the ranked impact of different barriers under four categories: financial, social, community healthcare, and surgical center. Data for binary patients are on the left, nonbinary on the right. Greater significance is shown toward the right of the divergence, in warmer colors. Lesser significance is shown toward the left in blues. * $P = 0.0049$; 95% CI, -4.28 to -0.787 . ** $P = 0.0018$; 95% CI, -3.87 to -0.905 . *** $P = 0.033$; 95% CI, -2.67 to -0.112 . **** $P = 0.0076$, 95% CI, -2.40 to -0.380 . ***** $P = 0.015$; 95% CI, -3.51 to -0.387 .

Table 3. Discrete (“Yes” or “No”) Information Regarding Healthcare Experiences between Nonbinary and Binary Cohorts

Healthcare Experience	Nonbinary (n = 71)	Binary (n = 37)	P	95% CI
Accessed all provider roles	91%	100%	0.01	-0.16 to -0.02
Found resources applicable	68%	89%	0.02	-0.39 to -0.03
Felt was own expert	21%	17%	0.60	-0.10 to 0.18
Found providers supportive	93%	89%	0.37	-0.05 to 0.13
Aware of referred hospital	75%	85%	0.24	-0.26 to 0.07
Had choice of hospital	60%	63%	0.78	-0.23 to 0.18

stated in their open text responses that they felt underrepresented in the current top surgery landscape and were excited to contribute to research that gave them visibility. Similarly, it may be that individuals with negative experiences feel more compelled to share their experiences. Indeed, the data show that although both groups experience barriers, nonbinary participants tend to face more and different barriers compared with binary participants. Moreover, this apparent increase in nonbinary-identifying patients further supports the need for better understanding of this community.

It must be emphasized that gender identities are not rigid categories. Fluidity exists among TGD individuals in terms of one’s preferences, gender expression, and personal circumstance. As such, not all TGD individuals desire GAS, and those who do may have different goals than others of their same gender. In terms of overarching trends among binary and nonbinary cohorts, the data show that binary transmasculine patients tend to desire a

more “cisgender passing” chest, or a chest that would be congruent with one found on someone who was assigned male sex at birth. Of course, as the data capture, some nonbinary patients also desire a cisgender-passing “male” chest. In fact, the nonbinary cohort demonstrates greater variability in surgical goals. Common goals for many nonbinary patients include removal of the nipples, to “just remove the breasts” and to no longer be perceived as feminine. Moreover, the desire to reduce but still preserve some breast tissue was exclusive to the nonbinary cohort, alongside the goal of “flexibility.” That is, being able to augment one’s chest using brassieres or flatten one’s chest using binders after breast reduction surgery with or without nipple preservation. Many nonbinary patients reported not having a specific surgical goal (Fig. 4). One such patient elaborated that they “didn’t have an outcome in mind because everything you see, 99% of the time, is on thin bodies.” Others commented that the resources available to them did not address their desires for fluidity, such

<i>Binary Sample Responses</i>	<i>Barrier</i>	<i>Non-Binary Sample Responses</i>
"Cost of surgery, time off."	Financial support	"I had to pay \$1800+ out of pocket in order to have my surgery."
"My GP is uneducated and uncaring on my gender transition, and made me run through hoops to prove I was genuinely trans to psychiatrists before saying she hadn't filed anything because it 'takes so long' on the computer. I had to do all the work."	Physician education and supportiveness	"Many healthcare providers I encountered seem to have a view that trans people are 'switching genders' and still work within a binary system of male/female. I was very scared that I would not present as 'male enough' to qualify for surgery and funding."
"Weight barrier."	Strict BMI criteria	"My biggest barriers were surgeons' arbitrary BMI restrictions, fatphobia from healthcare providers."
"My heart condition led to my first surgery date being cancelled"	Disability or comorbidity	"After expressing a desire to start hormones and the surgery process to my family doctor, both were delayed due to an irregular heartbeat. Further tests found nothing wrong/no causes for concern."
"Funding approval took way too long."	Funding wait time	"I think the largest delay to receiving top surgery was the pandemic and then the slow UHIP process."
"The surgery date got changed many times due to covid precautions set by the government."	Surgical wait time	"I was told that I would be booked for November, and then January etc. and it just kept getting delayed."
--	Communication and transparency	"How am I supposed to plan for a surgery happening at some nebulous point in the future? When I started the process I had a full-time job. When I got top surgery last week I had been unemployed for 6 months and about to move to a new city."
--	Public education and supportiveness	"Dealing with people/society after the surgery and transphobia I will face interpersonally and systemically. I also have a 10 year old child and thought a lot about what their life will be like with a trans parent."
--	Transportation	"I need to travel somewhere to get surgery, no matter where I end up going."

Fig. 4. Table showing sample free-text responses for binary (left) and nonbinary (right) patients in response to the prompt "If you wish to do so, please elaborate on any other barriers to top surgery that you experienced." For barriers with no endorsers in one patient group, "--" denotes a null value.

as reducing breast tissue to "bind on [masculine] days, but still keep the tissue so I could wear a pushup on [feminine] days." These findings reflect a possible need for greater diversity in body types and surgical goals represented in top surgery visual materials provided by surgeons. These data contribute to better evidence-based understanding of the broad trends in binary and nonbinary top surgery goals. This understanding may be beneficial in developing a clinical heuristic when working with TGD patients, but it is not to displace the criticality of tailoring each surgery to the individual patient.

The expansiveness of nonbinary identities likely contributes to the barriers they face. The barriers disproportionately affecting nonbinary patients centered on the gap in physician competency with nonbinary identities, namely prejudice from healthcare providers in the community

and the surgical center, difficulty finding healthcare providers familiar with nonbinary healthcare, and a lack of surgeons knowledgeable in gender-affirming care for nonbinary people. Aptly, many qualitative responses called for more physician competency training regarding TGD healthcare, especially regarding nonbinary identities. Better understanding of TGD identities and the nuances would facilitate more accurate conversation around differential patient needs and surgical goals.

Other gaps in the system perceived by patients include a need for increased government funding. This included funding for more GAS centers and/or surgeons who offer GASs to reduce wait times and, since some patients needed to travel between cities to receive top surgery, geographical barriers. Funding of at-home supports postoperatively for those without social supports was desired as well.

Binary Sample Responses	Area for Improvement	Non-Binary Sample Responses
"Make accessibility to completely funded surgery. This procedure shouldn't be viewed as aesthetic or elective. For many it is about survival." "Educate all health care providers in regards to trans health care."	Increase financial support Improve physician education and supportiveness	"Chest contouring should be covered by OHIP, or even just partially covered. It is a key aspect of top surgery." "I found myself presenting more binary as a result to avoid any confusion on the healthcare professional's part. I'd like that to end." "I am always nervous whenever I go to a doctor for anything related to my transition or scars because of transphobic comments and deadnaming by medical staff."
"I am paying out of pocket for contouring because of my weight. I am overweight due to my disabilities."	Eliminate BMI criteria Better accommodation for disabilities or comorbidities	"Less focus on BMI and weight, more body-inclusive practices, more practices informed by stats that gender-diverse folks are more likely to experience eating disorders and other body issues than other groups, elimination of pre-surgery weight-loss practices." "I also couldn't find resources around chronic illness and disability and how surgery might affect these."
"It'd be nice to have readily available information outlining the steps [to top surgery] because ever since I had my surgery I am having people contact me and ask me a million questions about the process and surgery."	Simplify application process	"Lay out a clear way to access care and where to start." "No requirement for gender dysphoria in order to receive funding."
"Hospitals and clinics need to be more resourced to have shorter wait times."	Reduce wait times	"Wait times that make the process more accessible [I've had to delay some life plans in order to get my surgery and make sure I stay in my area long enough for recovery and any follow up I may need in the several months following my surgery]."
"It should be easier for patients to check on the status of their funding application."	Communication and transparency	"Patients should be able to check in on the status of their funding on their own directly with the government." "Having a more accurate timeline for surgery would've been helpful."
"Make the information more available since some things can be hard to find from an objective choice [there is a lot of misinformation coming from right-wing sources] some of that information can cause anxiety and shame."	Improve public education and supportiveness	"More community outreach to make [the surgical centers] known." "The improvements I would like to see is just for the conversation to remain front and center to make it more socially acceptable"
"A transportation program for people without vehicles."	Transportation support	"People outside of major cities have a huge logistical difficulty in simply travelling to the surgeon for any necessary follow-ups. Can travel expenses be in any way covered?"
"More clinics and trained professionals to lower wait times."	Increase GAS programs and surgeons	"More surgeons for transition-related surgeries. The lack of surgeons is a barrier, especially for patients not close to a bigger city."
"Better support systems for transgender people to talk about [top surgery]."	Social support systems	"It was easy to feel overwhelmed by information online that was not verifiable and to only have one or two appointments with my surgeon which was appreciated. But [top surgery] felt like a big deal that needed more time to be supported in all the processes and questions leading up to the surgery. Some kind of peer support team I think could help a lot with that."
--	Patient autonomy	"The government shouldn't be telling trans people what type of surgery they are allowed to have to be authentically themselves. I understand they need to be very specific with what they cover, but they also need to listen to trans people, most specifically non-binary people, about what they want. We do not all fit in the same binary boxes."

Fig. 5. Table showing sample free-text responses for binary (left) and nonbinary (right) TGD patients in response to the prompt “In what ways would you like to see improvements be made in the government and/or healthcare system to combat barriers in accessing top surgery?” For areas for improvement with no endorsers in one patient group, “--” denotes a null value.

Many participants also desired better insurance coverage. In many scenarios, insurance coverage for surgery is not totally inclusive. Travel costs, accessory costs (eg, postoperative binder garments), and liposuction are often excluded from coverage.

Another important point of improvement highlighted by patients is confusion regarding the process of accessing top surgery. Some patients found that awareness regarding top surgery is currently lacking in many communities such that some patients did not know top surgery was an available treatment option for their gender dysphoria. Additionally, patients reported being unaware of who to speak to about wanting top surgery or getting a referral. Some patients reported that their primary care providers were also unfamiliar with the surgical referral process for top surgery or even where the surgical centers are or what varieties of top surgery exist. Better community outreach and public education by surgical centers or surgeon educators, as well as incorporating TGD healthcare in standard medical school curricula would likely improve this phenomenon. The creation of a step-by-step guideline on top surgery surgical referral, as well as a centralized platform hosting credible information regarding top surgery, by surgical centers offering these procedures was suggested by participants as well. Given the survey data, it is therefore crucial to keep nonbinary patients in mind when creating such platforms or resources, to give representation which is currently lacking in existing resources. Representation of patients with different body mass indexes and body types is also necessary.

Our study has some limitations. Although we are elucidating patient barriers to top surgery, we do rely on patients who ultimately were able to access top surgery despite the barriers they faced. This limitation is likely a confounding variable for our finding that 91% of nonbinary and 100% of binary patients accessed all the types of healthcare providers they desired. For future investigations, we would need to expand the survey distribution to reach people beyond surgical center patients. Additionally, this is a single-center study in a metropolitan area. Our findings may not encapsulate the experiences

of patients in more rural areas or accessing other surgical centers. However, our findings likely maintain satisfactory external validity given that our results reflect the nonbinary population’s disparities echoed in similar literature, albeit outside the top surgery context.^{7,9}

In conclusion, our findings may identify an area for improvement for healthcare providers regarding further education about nonbinary identities. To best serve this patient population and minimize their disproportionate barriers to care, it is important for gender-affirming surgeons and community providers to better understand the needs and experiences of nonbinary individuals. As well, during the surgical consult, it is crucial to clarify the patient’s top surgery goals and share possible options beyond the classical “chest masculinization” procedure involving bilateral mastectomy and nipple grafting.

Kathleen Armstrong, MD, MSc, FRCSC
 Transition Related Surgery Program
 Division of Plastic and Reconstructive Surgery
 Women’s College Hospital
 76 Grenville St
 Toronto, Ontario
 Canada
 E-mail: kathleen.armstrong@wchospital.ca

DISCLOSURES

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