


Gender-Diverse Patients' Awareness and Utilization of Gender-Affirming Laryngological Services

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Abstract

Objective: Despite gender-affirming laryngological services (GALS; eg, voice therapy or surgery) being available nationwide, there is a discrepancy between the number of transgender and gender diverse (TGD) people with vocal incongruence and those who pursue services. Primary care is an important setting for accessing gender-affirming care, including learning about GALS. The purpose of this study was to understand the relationship between access to primary care and utilization of GALS.

Methods: An anonymous cross-sectional online survey was developed in REDCap. Between June–November 2022, 187 TGD respondents answered all questions related to this analysis. We assessed the relationship between having a primary care provider (PCP) and use of GALS via logistic regression.

Results: Of the 167 individuals who reported having a PCP, 54% reported familiarity with GALS, compared to 45% of individuals without a PCP. Compared to the group without a PCP, a greater proportion of individuals with a PCP had received professional voice therapy (21% vs 5%) and voice surgery (3% vs 0%). Logistic regression models did not demonstrate a significant effect of primary care access on either familiarity with, or use of, GALS.

Conclusion: Most respondents (89%) were linked to the medical community through a PCP. A greater proportion of respondents with a PCP had accessed professional voice therapy and voice surgery compared with respondents without a PCP, though this difference was not statistically significant. Increased communication between GALS providers and PCPs would raise awareness of available services and may strengthen the referral pipeline to increase access to vocal care.

Level of Evidence: Level III.

Keywords

gender-affirming care, vocal congruence, voice therapy, voice surgery, transgender health

Introduction

Transgender Identity and Voice

Transgender and gender diverse (TGD) individuals have gender identities which differ from their sex assigned at birth. The TGD community includes transmasculine, transfeminine, non-binary, genderqueer, and agender people, among other identities. Individuals with any of these identities may or may not be on gender-affirming hormone therapy (GAHT); there are many TGD people who do not desire biomedical interventions to affirm their gender identity.^{1,2} For many TGD individuals, incongruence between their gender and their voice (as perceived by themselves and/or others) has significant psychosocial effects that impact confidence, perceptions of self, quality of life, and experiences of discrimination.^{3,4}

Estrogen-based GAHT does not lead to feminizing vocal changes for transfeminine people, as the effects of

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androgen-driven puberty on voice characteristics are irreversible.³ In order for transfeminine individuals who have experienced puberty to address vocal incongruence, they must do so through vocal modifications learned through voice therapy and/or voice surgery. Feminizing voice surgeries (eg, cricothyroid approximation, laser reduction glottoplasty, and anterior glottal web formation) are utilized by an estimated 1% of transgender women.^{1,5} This is likely due to barriers accessing care, as there are few surgeons trained in voice feminization procedures and insurance providers do not always cover voice surgeries. The utilization of voice therapy by transfeminine persons is higher at rates of 14%, and this includes those who access voice therapy after voice surgery as well.⁶

In contrast, testosterone-induced voice changes such as increased vocal fold mass and lowered voice pitch may lead to satisfactory masculinization for some transmasculine individuals on GAHT.^{7,8} While most transmasculine people on testosterone will experience some lowering of the pitch of their voice, these changes alone do not necessarily mean that one's voice will be perceived as "male" by others.⁹⁻¹¹ Masculinizing voice surgeries (eg, thyroplasty type III) are performed even less frequently than feminizing voice surgeries and only in recent years has there been widespread recognition that transmasculine individuals can also benefit significantly from professional voice therapy.^{4,12,13} There is a particular need for more research on vocal congruence and gender-affirming laryngological services (GALS) among transmasculine and non-binary people.^{14,15}

Depending on their individual gender identity and gender expression, non-binary and genderqueer individuals may feel that a voice perceived as more masculine or feminine is best aligned with their gender identity or may desire a voice perceived as androgynous.⁴ Vocal congruence and use of GALS by non-binary, genderqueer, and other gender diverse people has received little attention in research and clinical practice. GALS, including both voice therapy and voice surgery, can play an important role in improving alignment between gender identity and voice for individuals across the gender spectrum.

Accessing Gender-Affirming Voice Services

While the American Speech-Language-Hearing Association recognizes TGD voice therapy as within the speech-language pathologist's (SLP) scope of practice,¹⁶ only 20% of SLPs reported having received training in this area and only 8% had ever worked with TGD patients.¹⁷ Some major hospitals have created multidisciplinary transgender voice clinics where TGD individuals can access care from SLPs and otolaryngologists who specialize in GALS, but limited knowledge of these services among both the TGD community and the medical community may be a barrier to their use.^{18,19} Further, GALS are often not covered by health

insurance, which makes affordability a barrier to access.^{20,21} Prior research on TGD health information seeking behaviors has demonstrated that information on high-quality, evidence-based gender-affirming voice options can be difficult to find online.⁴ Taken together, these issues mean that even TGD people in geographic areas with GALS often do not utilize these services.

While experiences with discrimination and lack of trust in healthcare providers are major problems that negatively affect TGD individuals' use of medical services, many TGD people are connected to the medical community through primary care providers (PCPs).²² As such, PCPs could play an important role in providing education on, and referring patients for, GALS. Since existing research demonstrates that people who have accessed GALS report high rates of satisfaction,²³ strengthening this referral pipeline could have a positive effect on TGD people's well-being. This study reports on the prevalence of vocal incongruence and awareness and utilization of voice services among TGD people in the U.S., exploring how primary care access is related to familiarity with, and use of, gender-affirming voice services.

Materials and Methods

Study Design

An anonymous cross-sectional online survey was developed in REDCap. The survey included sections asking about demographic information, health status, and perspectives on personal safety, quality of life, and wellness. Survey completion took approximately 20 minutes. Participants were recruited online through Instagram, Facebook, and Twitter and through community events, professional listservs, and gender-affirming care-providing medical offices. Recruitment occurred in the U.S. from June through November 2022. Eligible participants were 18 years of age or older and identified as transgender, non-binary, or gender diverse. Individuals who responded "No" to either or both questions about age and gender identity were excluded. This study was approved by the Institutional Review Board of the University of Cincinnati.

Variables

Vocal Incongruence. Participants were provided with a numerical sliding scale to rate their current and ideal voices ranging from very masculine (0) to very feminine (100), with 50 being gender neutral. Vocal incongruence was a continuous numeric variable calculated by subtracting participants' current voice rating from their ideal voice rating. This information was used to descriptively describe our participant sample. In addition to the numeric vocal congruence variable, participants were asked to respond

categorically to the statement “I think my voice aligns with my gender” with “Yes,” “No,” or “Unsure.”

Familiarity and Use of GALS. Familiarity with GALS was assessed on a 6-point scale ranging from “Very Familiar” to “Very Unfamiliar.” Use of professional voice therapy and use of voice surgery were categorical variables which participants could respond “Yes,” “No,” or “Unsure” to having ever received. These were the dependent variables in the regression models.

Access to Primary Care. Access to primary care was a categorical variable determined by participants’ response to the question, “Do you have a primary care clinician or office?” to which they could respond “Yes,” “No,” or “Unsure.” This was the independent variable for each regression model.

Covariates. Participants were asked about their race (Asian, Black, Native American/Alaska Native, Native Hawaiian/Pacific Islander, White, 2 or more races, or other), ethnicity (Hispanic/non-Hispanic), gender identity (man/transgender man/masc, woman/transgender woman/femme, or non-binary/genderqueer/other), and educational attainment (high school degree or less, some college, or college/graduate/professional school).

Statistical Analysis

Associations between having a PCP and history of professional voice therapy or vocal surgery were estimated using binomial logistic regression. Associations between having a PCP and familiarity with gender-related voice therapy were estimated using ordinal logistic regression. Data met assumptions for binomial and ordinal logistic regression models. All models were adjusted for race, gender identity, and educational attainment. Significance was set a priori to $P < .05$. Continuous values are reported throughout as a mean and standard deviation (SD) and dichotomous values are reported as a number and percentage of total sample. Participant characteristics were compared between those who reported having a PCP and those who did not using a t -test, chi-squared test, or Fisher’s exact test, as appropriate. Statistical analysis was carried out in RStudio Version 2022.01.2 using the `dplyr` and `ggplot2` packages.^{24,25}

Results

Participant Characteristics

Of the 224 total survey responses, 187 individuals were included in this analysis. Respondents who did not answer the questions related to having a PCP and familiarity with and use of GALS were excluded ($n=37$). There were 167

individuals who reported having a PCP, while 20 did not have 1 or were unsure. Most participants were White (82%) and the mean age was 31 years (range 18-79 years). Participants’ gender identities were: 36% ($n=67$) transmasculine, 35% ($n=65$) transfeminine, and 29% ($n=55$) nonbinary or genderqueer. Participants represented 22 different states of residence within the U.S.; 61% were from Ohio. Participant characteristics were compared between individuals who reported having a PCP and those who did not or were unsure (Table 1).

Vocal Incongruence

In response to the statement “I think my voice aligns with my gender,” 50% ($n=94$) of participants said “No,” 32% ($n=60$) said “Yes,” and 18% ($n=33$) were unsure. Transfeminine respondents were significantly more likely to say that their voice did not align with their gender ($P < .001$), with 65% answering “No” to this question compared to 51% of nonbinary/genderqueer respondents and 36% of transmasculine respondents. There was not a significant difference in whether respondents thought that their voice aligned with their gender based on whether they had a PCP ($P = .30$).

When vocal incongruence was assessed numerically based on participants’ current and ideal ratings of their voices, 95% ($n=177$) of the whole sample reported some amount of vocal incongruence, with a mean vocal incongruence calculation of 31. Transfeminine respondents had significantly higher vocal incongruence scores (mean=42) than transmasculine (mean=24) and nonbinary/genderqueer (mean=28) respondents ($P < .001$). There was not a significant difference in mean vocal incongruence scores between individuals with and without a PCP (31 vs 28, $P = .06$). The group that reported having a PCP was significantly older ($P = .02$), had higher educational attainment ($P = .01$), and had a greater proportion of White individuals ($P = .04$) compared with the group without a PCP.

Familiarity with Gender-Related Voice Services

Of the 167 individuals who had a PCP, 54% ($n=91$) were somewhat familiar, familiar, or very familiar with GALS, compared to 45% ($n=9$) of the 20 individuals without a PCP (Figure 1). Sixty-three percent ($n=41$) of transfeminine respondents reported familiarity with GALS, compared to 43% ($n=29$) of transmasculine and 46% ($n=30$) of nonbinary/genderqueer respondents ($P = .01$). Familiarity with voice services was not significantly different between the 2 groups ($P = .06$). We assessed the relationship between primary care access and familiarity with gender-related voice therapy using ordinal regression adjusted for race, gender identity, and educational attainment (Table 2). We did not observe any significant association between having

Table 1. Participant Characteristics.

	Have a PCP	No PCP or unsure	P-value
Sample size	167	20	
Race			.08
White	139 (83%)	14 (70%)	
Black	8 (5%)	3 (15%)	
Asian	3 (2%)	1 (5%)	
Native American/Alaskan Native	0	1 (5%)	
Native Hawaiian/Pacific Islander	1 (<1%)	0	
2 or more races	14 (8%)	1 (5%)	
Other	2 (1%)	1 (5%)	
Age	32 (11)	27 (9)	.03*
Gender identity			.26
Man/transgender man/Masc	62 (37%)	5 (25%)	
Woman/transgender woman/femme	59 (35%)	6 (30%)	
Non-binary, genderqueer, other	46 (28%)	9 (45%)	
Educational attainment			.03*
High school or less	22 (13%)	7 (35%)	
Some college	52 (31%)	4 (20%)	
College degree or more	92 (55%)	8 (40%)	
Gender-affirming hormones	135 (81%)	11 (55%)	.02*
Vocal incongruence			
Continuous scale	31 (22)	28 (20)	.60
Categorical response = "Yes"	85 (51%)	9 (45%)	.30

Note. Continuous values are reported as mean and standard deviation; dichotomous values are reported as number and percentage of total sample. P-values are for either a t-test or chi-squared test of the characteristics between participants with and without a PCP. P-values of <.05 were considered significant (*).

a PCP and familiarity with voice therapy ($\beta = -.69$, 95% CI [-1.14, -0.24], $P = .13$).

$P = .20$) or voice surgery ($\beta = -.08$, 95% CI [-0.12, -0.04], $P = .06$).

Use of Gender-Related Voice Services

Transfeminine respondents were significantly more likely than transmasculine and nonbinary/genderqueer respondents to have received professional voice therapy ($P < .001$), with 43% ($n = 28$) of transfeminine individuals, 4% ($n = 3$) of transmasculine individuals, and 8% ($n = 5$) of nonbinary/genderqueer individuals reporting a history of professional voice therapy. In the group of individuals who had primary care access, 21% ($n = 35$) had received professional voice therapy compared with 5% ($n = 1$) in the group that did not have primary care access ($P = .09$; Figure 2). There was a significant difference in the proportion of individuals who had received voice surgery ($P = .01$). While no individuals without a PCP had received voice surgery, 3% ($n = 5$) of individuals who had a PCP had received voice surgery. Four of the 5 individuals who had received voice surgery were transfeminine; 1 was nonbinary/genderqueer. We assessed the relationship between having a PCP and history of GALS using logistic regression adjusted for race, gender identity, and educational attainment (Table 3). We did not observe any significant association between having a PCP and history of voice therapy ($\beta = -.12$, 95% CI [-0.27, 0.03],

Discussion

This study contributes to the growing body of literature on gender-affirming voice therapy, demonstrating that transfeminine participants were more likely to have familiarity with and to have received professional voice therapy than transmasculine and nonbinary/genderqueer participants. A strength of this study is its sample size of 187 participants, which is a major addition to the literature which is a relatively large sample size compared to prior TGD population voice studies. There was a discrepancy between the proportion of respondents who reported vocal incongruence when asked outright whether their voice aligned with their gender (50%) and the proportion who had incongruence between their reported current and ideal vocal ratings (95%). Other researchers have found the prevalence of vocal incongruence among TGD individuals to be 88%.⁴ While both numbers demonstrate the necessity of access to GALS for TGD individuals, 95% of respondents having some amount of vocal incongruence when assessed numerically indicates that rates of vocal incongruence may underestimate the actual prevalence of experienced incongruence if assessed categorically. This discrepancy may have arisen if some

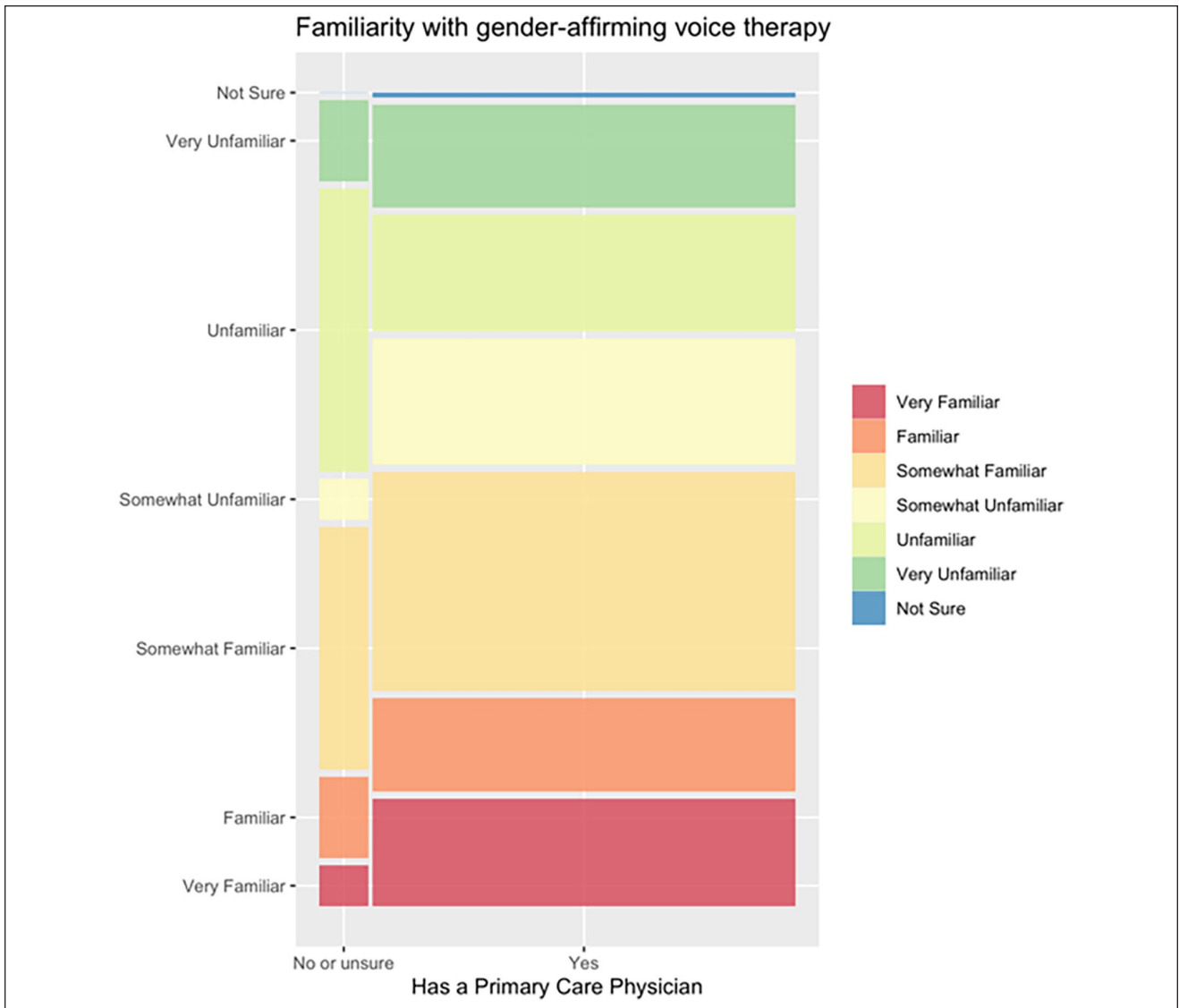


Figure 1. Mosaic plot displaying familiarity with gender-affirming voice therapy of participants with and without a PCP.

Table 2. Familiarity With and Use of Gender-Related Voice Services for Individuals With and Without a PCP.

	PCP (n=167)	No PCP or unsure (n=20)	P-value
Familiarity with voice services			.16
Very familiar	23 (14%)	1 (5%)	
Familiar	20 (12%)	2 (10%)	
Somewhat familiar	48 (29%)	6 (30%)	
Somewhat unfamiliar	27 (16%)	1 (5%)	
Unfamiliar	26 (16%)	7 (37%)	
Very unfamiliar	22 (13%)	2 (10%)	
Not sure	1 (1%)	1 (5%)	
Received voice therapy	35 (22%)	1 (5%)	.09
Received voice surgery	5 (3%)	0 (0%)	.01*

Note. P-values are for Fisher’s exact tests assessing differences between responses given by individuals with and without a PCP. P-values of <.05 were considered significant (*).

individuals felt that their voice aligned well enough with their gender to be perceived by others as congruent, but they experienced an internal incongruence between their current and ideal voice. This internal incongruence could still contribute to gender dysphoria, and as such, still has important implications for TGD individuals’ health and wellbeing.

In our analysis of the relationship between primary care access and familiarity with or use of GALS, having a PCP was not associated with increased familiarity with GALS, history of voice therapy, or history of vocal surgery. Given that 21% of individuals with a PCP had received professional voice therapy, compared with 5% of individuals without a PCP, primary care access is likely to still be important to TGD patients’ likelihood of receiving voice therapy and surgery despite lacking statistical significance in this study. Since familiarity with GALS did not differ significantly between those with and without a PCP (54%

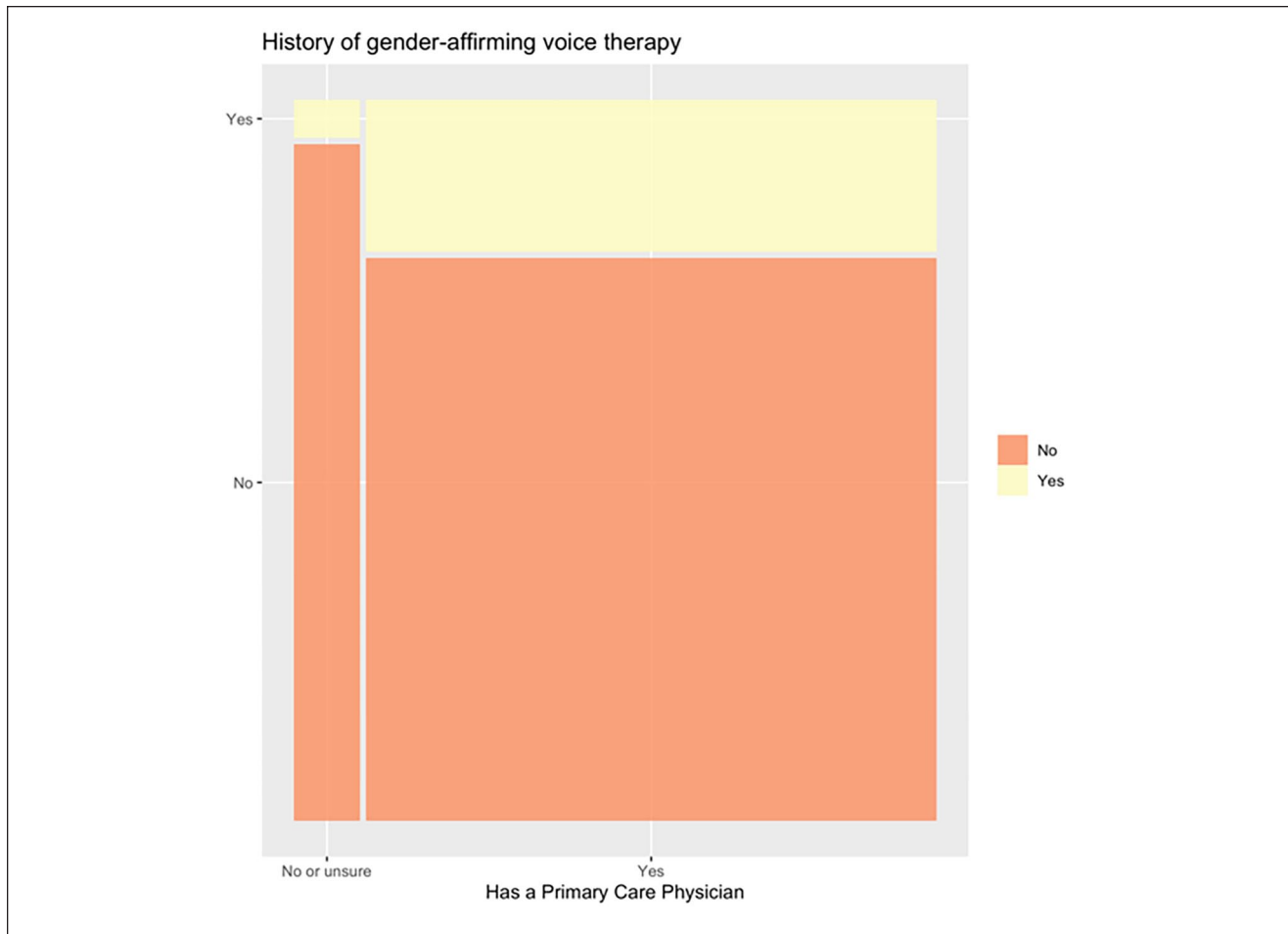


Figure 2. Mosaic plots displaying the proportions of participants with and without a PCP who had received gender-affirming voice services.

Table 3. Regression Models Estimating Association Between Having a PCP and Familiarity With/Use of Gender-Related Vocal Services.

	Coefficient (β)	95% CI	P-value
Familiarity with vocal services	-.69	[-1.14, -0.24]	.13
History of vocal therapy	-.12	[-0.27, 0.03]	.20
History of vocal surgery	-.08	[-0.12, -0.04]	.06

Note. All models were adjusted for race, gender identity, and education level. Familiarity with vocal services was assessed using ordinal logistic regression and history of vocal therapy or surgery was assessed using binomial logistic regression. P-values of $<.05$ were considered significant.

and 45%, respectively), this presents an opportunity for PCPs to introduce gender-affirming voice options to their TGD patients.

More communication between GALS providers and PCPs who work with TGD individuals could help PCPs become more familiar with the therapeutic and surgical options for improving vocal congruence. This could allow PCPs to have more informed discussions about GALS with their patients and could increase referrals for GALS. There

is general agreement that comprehensive gender-affirming care is best delivered through a multidisciplinary team and, as a result, there has been nationwide growth in specialized clinics for individuals seeking gender-affirming care from different types of medical providers.²⁶ When TGD health providers across disciplines, such as primary care, speech-language-pathology, and otolaryngology, work in proximity to each other as they often do in multidisciplinary programs, there are opportunities for training and education on how

each field's work can complement the other's to best support TGD patients' needs.²⁷ This type of collaboration can be more difficult to facilitate when providers' work is siloed into more traditional departmental structures.

While familiarity with aspects of gender-affirming care such as hormone therapy and chest surgery has risen in the general public and the medical community, GALS have not received the same amount of attention. As a result, PCPs may be less likely to consider referring TGD patients to GALS providers unless a patient specifically asks for a referral, or the PCP has previous experience referring to GALS providers. Given that increased vocal congruence is known to improve TGD individuals' safety and quality of life,^{3,4} strengthening the referral pipeline to GALS providers could play a major role in the health and well-being of the TGD community. PCPs are an essential part of a multi-pronged strategy to meet the voice subspecialty care needs of TGD patients, along with other providers of gender-affirming health care (eg, psychiatrists and endocrinologists), online communities of TGD individuals (eg, Reddit and Transbucket), and voice experts outside of medicine (eg, voice teachers).

Limitations and Future Directions

A major limitation to this work is that statistical power was limited by the fact that 89% of respondents had a PCP. This is likely in part due to recruitment via flyers in gender-affirming primary care offices in Cincinnati and across the U.S. A recent report demonstrated that only 42% of transgender and gender diverse individuals in the Cincinnati metropolitan area have a PCP,²⁸ yet most of our respondents were from Ohio (likely Cincinnati), suggesting overrepresentation of participants who are connected to the medical system, and particularly to affirming providers who have an awareness of GALS given their professional connection to the research team. It is possible that access to primary care is, in fact, an important predictor of familiarity with and use of GALS, but the small size of the group that did not have a primary care clinician limited our ability to detect differences. Since prior research has identified a link between having a PCP and accessing other types of speech therapy,²⁹ this could very well be the case.

Another key limitation of this study is that our survey did not specifically ask participants how they had become familiar with GALS, which is essential information to have to identify sites of potential improvement in the GALS education and referral pipeline. Given the lack of access to PCPs that many TGD individuals experience and the minimal training that many PCPs receive in addressing TGD patient needs, TGD patients frequently get their health information online through support groups and social media.³⁰ This important phenomenon was not studied in this paper, which further limits our findings. It is also

possible that some respondents received information about and referrals for GALS from psychiatrists and GAHT-prescribing endocrinologists, which was not directly assessed in this survey. While there are many sources, both within medicine and outside of it, from which TGD patients receive information about GALS, in this study we chose to focus on PCPs as the referral source to build upon existing literature exploring the relationship between PCPs and referrals to otolaryngology.³¹ It is important to acknowledge, however, that having access to a PCP does not necessarily mean that TGD individuals have access to high quality, trans-competent care, as there are major gaps in PCPs knowledge of and comfort with providing LGBTQ+ healthcare.³²

Additionally, we did not examine participants' use of non-SLP vocal coaching (eg, vocal pedagogy). There is a growing number of TGD people seeking gender-affirming vocal education in the context of vocal pedagogy instead of, or in addition to, SLP services.³³ Examining the experiences of TGD individuals who seek gender-affirming vocal therapy through different approaches and theoretical perspectives such as vocal pedagogy is an important area of future study.

Although our work provides more information about the presence and degree of vocal incongruence in TGD people, the questions used for these metrics (yes/no and numerical sliding scale) have not yet been validated. At present, there are standardized assessments available (eg, Trans Woman Voice Questionnaire) that characterize the impact of vocal incongruence and voice-related problems on quality of life and daily experiences.^{34,35} Researchers should consider the target demographics, as some questionnaires are only currently validated on specific gender identities and not applicable to all TGD people. As such, these were not chosen for our survey due to the inability to capture experiences across the gender spectrum.

Finally, white respondents are overrepresented in our sample in relation to the proportion of the TGD community they comprise. Because TGD people of color experience different disadvantages in their lived experiences and access to medical care,³⁶ these data may not accurately reflect their access to primary care or familiarity with and use of GALS. Future directions for this work include analyzing the sources of information about and referrals for GALS, assessing the effectiveness of GALS on vocal congruence, and examining the relationship between vocal incongruence and safety and quality of life.

Conclusion

This study contributes evidence that vocal incongruence is an issue experienced by many TGD individuals. Future studies are needed to better understand the relationship between primary care access and familiarity with or use of

GALS given the small number of respondents in this study who did not have a PCP. However, the primary care setting presents a major opportunity to improve familiarity with and use of GALS. Strengthening the referral process between PCPs and GALS providers could have significant positive effects on transgender and gender-diverse individuals' safety and well-being.

Authors' Note

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Declaration of Conflicting Interests

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