Perceptions, knowledge, and perceived competencies of South African speech-language pathologists to render transgender voice and communication training

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Perceptions, knowledge, and perceived competencies of South African speech-language pathologists to render transgender voice and communication training.

Background: Speech-language pathologists (SLPs) receive extensive education and training on voice and voice disorders. Therefore, they are integral in rendering transgender voice and communication training (TVCT), as part of their scope of practice. Research has, however, identified a lack of confidence in SLPs to render this service due to a perceived lack of education, knowledge, and clinical exposure.

Aim: To determine the perceptions, knowledge, and perceived competencies of South African SLPs regarding TVCT.

Methods: A cross-sectional open online survey design using non-probability purposive and convenience sampling was used. Fully qualified, practicing South African SLPs were asked to volunteer to participate on social media platforms. Fifty-two valid data sets were recorded.

Results: Most participants agreed that TVCT falls within their scope of practice (n=42, 84%), viewing it as their ethical responsibility (n=40, 80%) as well as a necessity (n=34, 68%). However, most participants reported feeling inadequately prepared to provide TVCT (n=34, 68%) due to insufficient education and training in this field, with 23 participants (45.1%) reporting that they had not received any education or training on the topic.

Conclusions: Participants generally held positive attitudes towards TVCT yet felt unprepared to render the service due to insufficient education, training, and exposure, revealing a crucial professional development need.

Keywords: transgender voice modification; transgender healthcare; survey research design; South Africa; speech-language pathologist(s); LGBTQ+

Introduction

Living authentically is important in transgender communities as it means that they present as their associated gender rather than the gender assigned to them at birth (Davies & Goldberg, 2006). The human voice is an essential part of human identity and a principal indicator of gender in communicative interactions (Coleman et al., 2022; Davies et al., 2015; Zimman, 2017). Voice-related quality of life is typically lower among transgender people compared to the general population due to not being perceived as their associated gender by others (Chadwick et al., 2022; Davies & Goldberg, 2006; Nobili et al., 2018). This thus highlights the critical role of voice to live authentically among transgender people (Gray & Courey, 2019).

To achieve their authentic voices, transgender people have two different management options: (1) transgender voice and communication training (TVCT); and (2) phonosurgery (Gray & Courey, 2019; Kim, 2020). Research has established that transgender people typically prefer the former, as phonosurgery only addresses vocal pitch and no other aspects of gendered communication, resulting in reduced satisfaction among transgender clients (McNeill et al., 2008; Schwarz et al., 2017). Research has also supported TVCT above phonosurgery, as TVCT improves voice-related quality of life outcomes in transgender clients (Hancock et al., 2011).

TVCT is an elective approach to educate and counsel transgender people regarding appropriate verbal, non-verbal, and voice characteristics to increase the congruence of their self-expression with their associated gender (ASHA, 2016; Health Professions Act No. 56 of 1974, 2017). Multiple studies have established that TVCT is useful in supporting transgender people in expressing their gender through speech and to be perceived as their associated gender by others (Davies et al., 2015). It is recommended that TVCT should address the areas of vocal health, resonance, pitch,

intonation, and volume; articulation; and language (pragmatics, syntax, and semantics) as well as non-verbal communication (Adler, 2019; Coleman et al., 2022). Due to speech-language pathologists' (SLPs) education and training on voice, voice disorders, and the treatment thereof, they are ideally situated to render TVCT, and it thus forms part of their scope of practice (ASHA, 2016; Hancock & Garabedian, 2013; Wylie, 2016).

Numerous research studies were conducted in the United States of America (USA), Australia, New Zealand, and Taiwan on the knowledge, training, and attitudes of SLPs on service provision for transgender clients (Hancock & Haskin, 2015; Litosseliti & Geogiadou, 2018; Matthews et al., 2020; Sawyer et al., 2015). These studies found that SLPs are generally aware that TVCT forms part of their scope of practice and that they view transgender service delivery favorably (Hancock & Haskin, 2015; Litosseliti & Geogiadou, 2018; Matthews et al., 2020; Sawyer et al., 2015). However, it was also found that in most cases SLPs feel unprepared and may even feel uncomfortable rendering services to this population due to a lack of education and training (Hancock & Haskin, 2015; Litosseliti & Geogiadou, 2018; Matthews et al., 2020; Sawyer et al., 2015). In contrast, in a study conducted in India, participants reported having limited knowledge about TVCT and a lack of sufficient education and training on the topic, but interestingly they generally reported feeling comfortable working with transgender people (Gunjawate et al., 2020).

Current literature regarding knowledge, perceptions, and self-perceived competencies of SLPs in TVCT has predominantly been produced in high-income countries (HIC) (Hancock & Haskin, 2015; Litosseliti & Georgiadou, 2018; Matthews et al., 2020; Sawyer et al., 2015) with limited research from low-to-middle income countries (LMICs) (Gunjawate et al., 2020). The perceived lack of sufficient training on

TVCT service delivery among SLPs internationally justifies the importance of determining the knowledge of SLPs in South Africa, an upper-middle-income (UMI) country with lower-income settings (Adam & Moodley, 2021; World Bank, n.d.), regarding TVCT. Furthermore, it is important to determine how competent South African SLPs perceive themselves in rendering services to the already marginalized, vulnerable, and underserved transgender population (Kugara et al., 2017; Luvuno et al., 2019; Wylie, 2016). Therefore, the following research question was posed: *What are the perceptions, knowledge, and perceived competencies of South African speech-language pathologists to render transgender voice and communication training?*

Methodology

A cross-sectional online survey design using non-probability purposive and convenience sampling was used. Fully qualified, practicing South African SLPs were asked to volunteer to complete the survey shared on various social media platforms and through emails. IRB clearance (HUM013/1022) was obtained before data collection commenced.

Study population and sampling

To be considered eligible for participation in this study, participants had to be registered with their relevant registration authority, in effect, the Health Professions Council of South Africa (HPCSA). There were 3 158 SLPs registered in South Africa at the time of this study (HPCSA, 2022). Furthermore, participants also had to be actively practicing as a SLP in South Africa at the time of participation. In this study, the term "actively practicing" signifies a SLP currently involved in delivering clinical services to clients and patients. Using G*Power software analysis, the minimum required sample size

(n_{min}) for medium (0.3) and large (0.5) effect size for correlation was determined to be 84 and 29, respectively, to achieve a statistical power of 0.8 (Faul et al., 2007; Téllez et al., 2015).

A total of 64 participants started the online survey. However, one survey set was excluded from the analysis due to non-compliance with the participation requirement for this study. Additionally, 11 incomplete data sets were discarded. Consequently, only 52 survey sets were considered for interpretation and analysis in this study (Table 1).

The participants' ages ranged from a minimum of 22 years to a maximum of 66 years (mean: 33.7, SD: 11.96). The participants' experience working as SLPs ranged between one and 40 years (mean: 10.0, SD: 11.67). All participants (n=52, 100%) were registered with their regulatory authority and actively practicing in South Africa at the time of participation.

Material and Data Collection

Data was collected using an open online survey hosted on the University of Pretoria's Qualtrics database. The survey was developed by incorporating and adapting questions from existing surveys used in related studies by Hancock and Haskins (2015), Sawyer et al. (2015), and Matthews et al. (2020). Sections of the American Speech-Language-Hearing Association's (ASHA) *Cultural Self-Reflection: Gender Inclusivity* (2021) and *Cultural Competence Check-in: Self-Reflection* (2021) were also adapted and incorporated for use in the survey. The survey included 30 closed-ended Likert and categorical scaled questions. The survey also included five open-ended questions to obtain rich, in-depth information and elicited perspectives of participants. The survey was designed to be completed within an estimated time of 10 to 15 minutes.

Content validity was established using the *Content Validity Index (CVI)* as set out in Yusoff (2019) using a panel of three experts in the fields, two of which held PhD qualifications in Speech-Language Pathology, and one a Master of Arts, and with a combined experience of 60 years, prior to the survey's distribution. The CVI for the final version was found to be equal to 1, which is an acceptable value (Yusoff, 2019).

Links to the online survey were posted on the Facebook™ pages of profession-specific and allied healthcare groups, on other identified social media platforms, as well as distributed by the South African Speech-Language-Hearing Association (SASLHA) to its members through emails. Upon clicking the link, the informed consent letter was presented, requiring consent before entering the survey. The participants had 21 days to complete the survey.

Data analysis

Raw data was analyzed through descriptive and inferential statistics. Inferential statistics were used to draw comparisons within and across data using the *Statistical Package for the Social Sciences (SPSS) version 28* with a 5% level of significance. *Non-parametric Spearman correlations (rs)* were used to test for significant correlations between variables. For missing values, pairwise deletion was used as it leads to larger sample sizes and higher statistical power as opposed to using listwise deletion (Raaijmakers, 1999).

All qualitative data were analyzed using qualitative content analysis to discern patterns in the participants' self-reported thoughts and perceptions. Codes were systematically generated by segmenting text data into sentences, using the actual language as expressed by the participants. Following a comprehensive review,

identified codes were organized into descriptive categories or themes, which were then quantified based on their observed frequency.

Results

Education and training. A minority of participants (n=4, 8%) reported feeling adequately prepared by their university education to offer TVCT. Furthermore, most participants (n=34; 65.4%) reported feeling that their university education did not adequately equip them to deliver TVCT (Figure 1). Older participants were found to have received significantly less education and training in TVCT during their qualifying degree curriculum compared to younger participants ($p<0.001$, $rs=-0.626$).

The participants were asked to assign priority scores to different topics that they believed should be incorporated into SLP education and training in providing LGBTQ+ client care (Figure 2).

Perceptions. The participants generally reported holding favorable views of their role in transgender healthcare (Table 2). As age among participants increased, their self-perceived role in transgender healthcare significantly decreased ($p=0.008$, $rs=-0.374$). Similarly, as the participants' years of experience increased, their self-perceived role in transgender healthcare decreased ($p=0.016$, $rs=-0.339$).

Participants were asked whether there were any moral beliefs or scenarios which could prevent them from providing quality services to LGBTQ+ clients. Only five participants (12.5%) acknowledge holding such beliefs, while most reported not holding such beliefs (n=31, 77.5%). Common themes identified from these beliefs include: (1) concerns about potentially violating ethical guidelines (p1: *"If the transgender individual was under the age of 18 and had parents that are transphobic, and they don't give consent… I feel in that situation it would be hard because I'd want to advocate for*

the patient… So, I may cross a line in advocacy."); (2) concerns relating to practitioner autonomy to choose which population they serve (p2: *"… it should be my choice to provide services to whichever population I choose… I do not feel that a practitioner can be forced to deliver services he/she is not trained for, as it will not benefit the client.")*, and (3) concerns relating to competence (p14: *"… a practitioner can(not) be forced to deliver services he/she is not trained for, as it will not benefit the client.."*). One participant (2.5%) expressed the view that it is *"… unethical to mistreat a psychological issue and to support gender appropriation."* (p3).

Participants were then asked to provide a brief description of their views on TVCT in therapy. Qualitative content analysis revealed six categories (Table 3).

Knowledge and self-perceived competence. More than half of participants expressed feeling knowledgeable (n=28; 53.8%) and competent (n=27; 51.9%) in voice therapy, and comfortable with the assessment of voice-related issues in general (n=29; 55.8%). However, most participants reported feeling uncomfortable when it came to providing assessment (n=28; 56%) and treatment (n=31; 62%) specifically for transgender clients. Less than half of the participants reported that they were likely to pursue further education and training for treating transgender clients (n=22; 44%).

Participants with more exposure to TVCT during their qualifying degree program reported significantly higher levels of comfort in providing care to transgender clients ($p=0.016$, $rs=0.340$). For participants who reported that their university education had prepared them well for treating transgender clients, a statistically significant relationship was observed between their reported level of comfort providing assessment ($p=0.002$, $rs=0.426$) and treatment ($p<0.001$, $rs=0.586$) to transgender clients. Participants were asked to rate their level of agreement regarding the reasons they believe transgender people might seek voice modification services (Figure 3).

The participants were asked to match gender-related terms with corresponding descriptions, which were obtained from Hancock & Haskin (2015) [Figure 4]. Participants displayed fair knowledge of the LGBTQ+ terminology provided to them

Participants were presented with a series of true-false (T/F) questions pertaining to transgender voice and transitioning to observe their adherence to stereotypes (Table 4). Participants displayed poor knowledge of the effects of hormone treatment on vocal pitch.

Less than half of participants (n=19, 39.6%) reported having encountered the term gender-affirming healthcare (GAHC). When asked to explain what they understand regarding this term, participants expressed a prevailing consensus regarding GAHC, characterizing it as an "integrated" or "affirming" methodology in voice modification therapy.

> p28: *"..., affirming their experiences and supporting the individual… to reduce gender dysphoria or other distress that they may be experiencing."*
>
> p43: *"an umbrella term for the holistic approach to support and affirm someone's gender… it is not only medical support, but also psychological, behavioral, social, etc."*

Only four participants (8.3%) described GAHC in terms of social dimensions as well as physical and mental dimensions. The same participant (n=1; 2.1%) who viewed TVCT as "unethical", also reported negative views of GAHC, describing it as "a dangerous healthcare practice" that is ineffective in the alleviation of depression among transgender clients.

The participants were instructed to assign a priority score for different domains of intervention that they deemed necessary to be addressed during TVCT (Figure 5). Participants prioritized vocal pitch (n=39, 92.9%) and vocal health and education (n=39, 92.9%) the most, and articulation the least (n=16, 38.1%).

The participants were asked to assign a priority score to healthcare professionals that they believed should be included in the healthcare team for transgender people

undergoing transitioning (Figure 6). As the participants' perceptions of healthcare professionals' involvement in the transitioning team increased, their assigned priority scores for relevant domains for intervention in TVCT also increased ($p=0.042$, $r_s=0.319$).

Additionally, participants suggested that, apart from SLP's, pharmacists (n=2, 4.9%), nurse practitioners (n=3, 7.3%), sexologists (n=1, 2.4%), electrolysis practitioners (n=1, 2.4%), community healthcare workers (n=1, 2.4%), dieticians (n=1, 2.4%), dermatologists (n=1, 2.4%), dentists/orthodontists (n=1, 2.4%), counselors (n=1, 2.4%), and families (n=1, 2.4%) should also be included in the transitioning team.

Participants were asked to rate their level of comfort and self-perceived knowledge on various LGBTQ+ topics (Table 5). Individuals who reported higher levels of knowledge on LGBTQ+ topics also reported significantly higher levels of comfort with LGBTQ+ topics ($p<0.001$, $r_s=0.764$). Generally, participants self-reported having higher levels of comfort with LGBTQ+ topics than knowledge of LGBTQ+ topics.

Among participants who had prior experience in providing TVCT, seven participants (17.5%) identified various resources as particularly valuable in the planning and implementation of intervention. These resources encompass online resources and courses such as The Informed SLP LLC© (n=1, 2.5%), Facebook™ groups (n=1, 2.5%), and training programs (n=2, 5%). Additionally, published literature and research such as the works of Boone et al. (2020) (n=1, 2.5%), Mills and Stoneham (2017, 2021) (n=1, 2.5%), and clinical journals and research articles (n=2, 5%) were also highlighted as valuable resources for staying up-to-date and informed on TVCT practice. The participants also highlighted the value of learning from transgender content creators and clients (n=2, 5%) to gain insight and perspectives directly from the transgender

community. One participant (2.5%) highlighted the limited availability of education and training courses for professional development, along with a perceived high barrier of entry into the field of TVCT practice as illustrated in the following example:

> p40: *"... Gaining information at this time is limited to reading up research articles and referring to literature. Those experienced in the field were not open to sharing advice. If this is taught at a graduate level it allows more therapists to gain skills and serve a bigger community."*

Discussion

The majority of participants in this study reported that they had not received sufficient education and training in TVCT during their qualifying degree curriculum and felt inadequately prepared to provide the service to transgender clients. This is consistent with research findings in higher-income countries (Litosseliti & Georgiadou, 2018; Matthews et al., 2020; Sawyer et al., 2015), as well as in available literature in LMICs (Gunjawate et al., 2020). Being able to render competent and ethically based services to a specific population is contingent on possessing the necessary education and training, cultural competence, and knowledge of a population's needs (Kelly & Robinson, 2011, Sue, 2001). These results indicate that currently practicing South African SLPs who participated in this study may not be able to serve the broadest range of individuals possible (Hancock & Haskin, 2015).

Over time, SLP training programs have gradually increased education and training on TVCT (Jakomin et al., 2020), which could explain why older participants in the current study reported receiving significantly less education and training on TVCT compared to younger participants ($p<0.001$, $r_s=-0.626$). As societal awareness of the unique healthcare needs of transgender people increases, the significance of culturally competent care for this population is recognized more (Matthew et al., 2020).

Consequently, international SLP training programs have adapted to these developments by incorporating more extensive education and training on TVCT (Jakomin et al., 2020), potentially followed by South African training programs. Despite this positive development, most participants who reported having received education and training indicated that it was provided primarily in the classroom, similar to the participants in Sawyer et al. (2015). This suggests that the training received was primarily theoretical in nature, with little exposure to practical experience.

An explanation for this result could be that transgender people might be unaware that SLPs could support them during their transitioning with TVCT (Sawyer et al., 2015).

Similar to previous research (Litosseliti & Georgiadou, 2018; Sawyer et al., 2015), most participants (84%) acknowledged that TVCT falls within their scope of practice and held positive views toward it. However, only 44% expressed an intent to pursue additional training for transgender client treatment, 14% were neutral, and 42% indicated no intention to seek further training. This is similar to findings by Matthews et al. (2020) who found that most of their participants were unlikely to pursue further training in transgender care. While the current study did not investigate why participants were unlikely to pursue further education and training opportunities in TVCT, a possible explanation could include that SLPs who are already established in one area of practice are less likely to shift their professional focus to a new or unfamiliar field (Matthews et al., 2020). This idea is elaborated upon by the World Professional Organization for Transgender Health (WPATH), which emphasizes that a historical neglect of cultural and clinical education and training in transgender healthcare stems from factors such as lack of faculty knowledge, faculty experience, and comfort with the relevant subject matter, as well as biases and limited space within existing healthcare curricula (Coleman et al., 2022). A concern raised among participants in the

current study, who were interested in TVCT, included difficulty finding appropriate resources and further education and training courses. TVCT related further education and training activities could be scarce due to a shortage of suitably qualified and experienced educators to develop and present such activities, as hypothesized by Matthews et al. 2020. To address this concern, universities as well as regulatory and professional organizations in South Africa, could take proactive measures to create these educational resources.

Participants generally viewed their own competence to provide assessment and treatment for transgender people negatively, which supports the findings in similar research (Litosseliti & Georgiadou, 2018; Sawyer et al., 2015). Participants highlighted encountering barriers to providing TVCT, such as limited education and training and practical exposure. As a result, participants might see themselves as lacking the required knowledge or skills to appropriately serve this population, consistent with Matthews et al.'s (2020) findings.

The participants in the current study displayed fair knowledge of LGBTQ+ related terminology. Participants did, however, experience increased difficulty matching the terms "transgender" and "heterosexism" with their corresponding descriptions. This supports similar research findings which found SLPs to be fairly unfamiliar with LGBTQ+ related terminology (Litosseliti & Georgiadou, 2018; Sawyer et al., 2015). The importance of terminology is highlighted in research, as correct terminology used by healthcare professionals is highly valued among transgender people (Pitts et al., 2009). This was further stressed by Sawyer et al. (2015) who advocated that SLPs should be able to address their clients appropriately and use terminology appropriately to facilitate a safe and secure atmosphere. Interestingly, no age effect was noted with regard to knowledge of LGBTQ+ associated terminology, contradicting previous

findings (Hancock & Haskin 2015; Litosseliti & Georgiadou 2018), that younger participants or student clinicians were more likely to have knowledge of LGBTQ+ terminology in comparison to older participants. A possible explanation for this finding might include increased exposure to LGBTQ+ terminology among all age groups due to the increased visibility and acceptance of LGBTQ+ people in popular media (Gonta et al., 2017). Furthermore, most of the participants mentioned that they personally know someone who identifies as part of the LGBTQ+ community (n=48, 92.3%), possibly increasing the chances that they have encountered the terms in social settings as well.

The results of the current study suggest that the term GAHC might not be widely known or used among South African SLPs. Promisingly, despite this, participants overwhelmingly associated the term with a comprehensive and supportive approach to transgender healthcare, which is used to alleviate emotional and psychological distress. However, their understanding of GAHC appears to be more focused on individual aspects of transgender healthcare rather than the broader social context that can influence the experiences of transgender people. Similarly previous studies found that most participants indicated that all the domains for intervention presented to them were important for TVCT (Matthews et al., 2020; Sawyer et al., 2015). This is also consistent with the recommended standards of care outlined by WPATH (Coleman et al., 2022). Participants in the current study appeared to have prioritized the domains of vocal pitch, vocal health, education for intervention, and vocal intonation above all other domains, supporting similar findings in literature (Hancock & Haskin, 2015). The domain participants favored the least in the current study was articulation. Only 38.1% of participants expressed that it must be addressed, 38.1% were neutral, and 23.8% reported it should not be addressed. The finding indicates insufficient knowledge among participants regarding the effect of articulation exercises on how cisgender listeners

perceive a speaker's gender by subtly changing certain formant frequencies (Leyns et al., 2021). Additionally, Azul et al. (2020) also emphasizes that articulation is one of the key cerebral activities involved in voice production, underscoring its significance in the context of TVCT.

Regarding which healthcare professionals should be included in the transitioning team, participants appeared to favor the inclusion of clinical psychologists, SLPs, and plastic surgeons, similar to findings by Gunjawate et al. (2020). Audiologists, physiotherapists, and occupational therapists received the lowest priority scores. This indicates insufficient knowledge among participants as occupational therapists provide valuable support to transgender individuals after transitioning, as it could negatively impact occupational performance (Daly & Hynes, 2020). Furthermore, physiotherapists play an important role in the treatment of the pelvic floor, mobilization, and scar management in transgender people undergoing gender-affirming vaginoplasty or phalloplasty (Cardinali & Manzer, 2021; Jiang et al., 2019). This lack of knowledge could possibly be improved through targeted further education and training programs in this regard.

Issues of morality generally did not appear to present a significant barrier to the provision of quality services for LGBTQ+ clients among participants, similar to research by Hancock & Haskin (2015) and Gunjawate et al. (2020), both of which found that the majority of their participants did not hold moral beliefs preventing quality service delivery to LGBTQ+ clients. Among participants who expressed concerns about serving LGBTQ+ clients in the current study, themes that emerged highlighted the root cause as being inadequate education and training and concerns regarding competence in TVCT, rather than stemming from personal issues with this population. Research by Hancock and Haskin (2015) found similar results as the worries expressed by their

participants were mostly related to their own competence in TVCT and not personal issues with LGBTQ+ people. Furthermore, the themes identified in the current study indicate a lack of awareness among participants of existing ethical and clinical guidelines to consult when working with transgender clients. Additional support for this finding is research by Hallin & Partanen (2022). In their study, the researchers found a lack of sufficient clinical guidelines as the main challenge reported by Swedish SLPs in clinical decision making after conducting an assessment (Hallin & Partanen, 2022). Awareness of existing guidelines among SLPs can be developed through targeted education and training programs and workshops. Moreover, regulatory agencies and professional associations in South Africa can endeavor to develop ethical and clinical guidelines that are contextually relevant to SLPs in the South African context.

Participants generally self-reported feeling knowledgeable about, and comfortable with, LGBTQ+ related topics. Interestingly, older participants generally reported feeling less comfortable with LGBTQ+ related topics than younger participants, indicating an age effect, even though no age effect was noted with regards to knowledge of LGBTQ+ associated terminology. Nonetheless, this finding supports similar results by Matthews et al. (2020) who found that younger SLPs generally felt more comfortable working with transgender people. Participants self-reported higher levels of comfort when compared to knowledge in LGBTQ+ topics, supporting the findings in existing literature (Gunjawate et al., 2020). Participants with higher levels of self-reported knowledge in LGBTQ+ topics also reported significantly higher levels of self-perceived comfort with LGBTQ+ topics. This could suggest that greater knowledge of LGBTQ+ topics may contribute to increased comfort and confidence among participants when engaging with issues related to the LGBTQ+ community.

For future research, it is recommended that a similar study with a larger

representative sample be conducted, as only 52 valid responses could be obtained for the current study. As stated earlier, G*Power software indicated that a minimum of 84 responses were required to achieve a statistical power of 0.8 for medium effect sizes (0.3). This being said, the smallest correlation (in absolute value) in the current study was 0.339, with the corresponding achieved statistical power being 0.704, meaning that there was a 70.4% chance of detecting a true effect for this correlation, with these percentages only increasing for all other correlations reported on. It should further be noted that although the more stringent cut-off value of 0.8 was used as an input parameter in G*Power for statistical power, some researchers have advocated that 0.7 is an acceptable level (Kraemer & Blasey, 2016). Although the lack of adequate sample size for an achieved statistical power of 0.8 is acknowledged, it should be noted that the response rates for online surveys are typically low. This could be attributed to the rise of online surveys, mobile phones, and information requests (Beullens et al., 2018). Future research could also focus on capturing uncertainties and experiences with transgender clients in the survey to provide a more comprehensive understanding of the experiences of South African SLPs. To explore and identify larger gaps in education and training, curriculum studies should be conducted across a range of various UMIC and LMIC. Also, in the current study, non-probability purposive and convenience sampling were used, and while convenience sampling is more cost-effective and easier to conduct than many other sampling methods, the results can only be generalized to the population that was conveniently accessible. Furthermore, this generalization from a convenience sample to its population is only possible if the sample was randomly drawn from that population, which was not the case in the current study (Andrade, 2021). Subsequent investigations on this topic may seek to explore alternative hybrid sampling methodologies, such as pairing random sampling with convenience sampling, as a

means to allow for generalization to the population. Finally, given that this survey collected self-reported data concerning professional and ethical matters, the potential for reporting bias was heightened (Matthews et al., 2020). Future research could therefore perhaps adapt the tool to measure more applied outcomes or supplement self-reported data with other methods of data collection, such as interviews.

Conclusion

The current study aimed to investigate the perceptions, knowledge, and self-perceived competence of South African SLPs in relation to TVCT. The study revealed a critical gap in the education and training of South African SLPs concerning TVCT. Most participants reported feeling inadequately equipped to serve transgender clients due to insufficient preparation during their qualifying degree programs, paralleling trends observed in international literature. Participants displayed fair knowledge of LGBTQ+ terminology and were generally unfamiliar with GAHC. While participants felt knowledgeable and comfortable with LGBTQ+ topics, they perceived themselves as lacking competence in TVCT. To address these issues, larger-scale representative studies are recommended, as well as improved education and training initiatives, and the development of contextually relevant and comprehensive ethical and clinical guidelines on TVCT.

Statement of human rights and ethical approval

The authors declare that the following study, with all its methods and procedures, have been approved by the appropriate institutional research ethics committee of the Faculty of Humanities at the University of Pretoria (HUM013/1022), in accordance with the

ethical standards as laid down in the 1964 Declaration Helsinki and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in this article. The informed consent form completed by the participants indicated permission for the results of the study to be disseminated through articles and dissertations. Participants were provided with the contact details of the authors should they wish to obtain the results of the study after its conclusion.

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Table 1. Demographic characteristics (n=52)

Demographic characteristics		Participants	
		n	**%**
Gender			
	Male	4	7.7
	Female	45	86.5
	Non-binary/third gender	2	3.9
	Prefer not to say	1	1.9
Identification as part of LGBTQ+ community			
	Yes	5	9.6
	No	44	84.6
	Prefer not to say	3	5.8
Personally knows someone in LGBTQ+ community			
	Yes	48	92.3
	No	3	5.8
	Unsure	1	1.9
Highest level of education completed			
	Bachelor's degree	17	32.7
	Honors degree	21	40.4
	Master's degree	13	25
	Doctoral degree	1	1.9
Resided primarily in a			
	Suburban setting (e.g., a city)	39	75
	Rural setting (e.g., a small town)	6	11.5
	Both for an equal amount of time	7	13.5
Worked primarily in a			
	Suburban setting (e.g., a city)	34	65.4
	Rural setting (e.g., a small town)	7	13.5
	Both for an equal amount of time	11	21.2
*Have been approached by transgender client seeking TVCT**			
	Yes	12	24
	No	38	76
TVCT Caseload			
	Currently on caseload	4	8
	Previously on caseload	7	14
	Never had on caseload	39	78
*Employment setting***			
	Private practice	29	55.8
	Public hospital	14	26.9
	Private hospital	12	23.1
	Public school	5	9.6
	Private school	5	9.6
	Other	3	5.8
	Primary healthcare clinic	2	3.8
	University	2	3.8

Note. ** Percentages add up to <100 as two participants (3.8%) did not answer the question.*
*** Percentages add up to >100% as the participants could select more than one option.*

Table 2. Participants' self-perceived role in transgender healthcare with inferential statistics (n=50)

Perception	Disagree		Neutral		Agree		Age		Experience	
	n	**%**	**n**	**%**	**n**	**%**	***p***	***rs***	***p***	***rs***
Scope of practice to treat	6	12	2	4	42	84	0.002	-0.432	0.002	-0.433
Ethical responsibility to treat	5	10	5	10	40	80	0.03	-0.307	0.024	-0.318
Medical and/or educational necessity	8	16	8	16	34	68	0.080	-0.250	0.071	-0.258

Table 3. Qualitative content analysis of participants' views of TVCT in therapy (n=38)

Categories	Sampled participant quotes
Participants recognized the importance of TVCT in gender affirmation.	p7: *"… I don't think enough transgender individuals know about (it), nor does it receive enough attention in research and practice."* p21: *"… (it) can help transgender individuals feel more comfortable with their voice, improve their ability to communicate… and reduce gender dysphoria."*
Participants expressed challenges in finding resources related to TVCT.	p16: *"… It can also be difficult finding resources or CPD courses related to it. I have found networking with therapists who offer this service is incredibly helpful in finding more information…*
Participants emphasized the importance of understanding each transgender client's unique goals and aspirations.	p23: *"It involves… ascertaining what the patient's goals are. Not all transgender people want the same outcomes and it's important to understand what the patient wants... it also involves trying to minimize vocally abusive behaviors…"*
Participants highlighted the importance of treating all patients with respect and providing necessary healthcare services.	p27: *… [a] therapist who deals with this MUST have specialized training… and learn a lot about this community and culture and be prepared to be part of a team on an ongoing long-term basis…"* p31: *"…. I feel very strongly that anyone whose speech, voice or communication causes them distress, should have the right to access the appropriate treatment."*
Participants highlighted encountering barriers to providing TVCT such as limited exposure, and possessiveness of referral sources by other therapists.	p16: *"… it is not covered in enough depth during one's university experience. It can also be difficult finding resources or CPD courses related to it."* p34: *"… therapists working with this community are very "possessive" of their referral sources…"*
Participants expressed curiosity and interest in exploring the topic of TVCT, despite lack of experience.	p8: *"… I feel very unprepared to accommodate the treatment into my practice. I hope it is being integrated into the undergraduate programmes. I feel I would prefer to be mentored through the process if I were to take on a transgender patient."* p37: *"It is something relatively new in speech therapy… Thus, I think several speech therapists have missed out on this sort of training at a tertiary education level."* p38: *"I am really intimidated by this, but I find it a fascinating area to explore."*

Table 4. Performance on T/F questions regarding LGBTQ+ statements (n=44)

T/F Questions	Authoritative source	n_{min}	Incorrect		I don't Know		Correct	
			n	%	n	%	n	%
Most LGBTQ+ people feel that their identities should not affect the care they receive from healthcare providers. *(Answer: True)*	Hancock & Haskin (2015)	44	-	-	4	9.1	40	90.9
People who identify as part of the LGBTQ+ community perceive their status as part of the community as important to their healthcare needs. *(Answer: True)*	Hancock & Haskin (2015)	44	-	-	10	22.7	34	77.3
Many LGBTQ+ clients report negative interactions with healthcare providers. *(Answer: True)*	Kelly & Robinson (2011)	44	1	2.3	18	40.9	25	56.8
Phonosurgery leads to increased satisfaction among transgender clients. *(Answer: True)*	Ettner et al. (2016)	42	5	11.9	20	47.6	17	40.5
Hormone therapy in male-to-female clients does not affect vocal pitch. *(Answer: True)*	Ettner et al. (2016)	42	6	14.3	20	47.6	16	38.1
Hormone therapy leads to improved vocal pitch in both male-to-female and female-to-male clients. *(Answer: False)*	Ettner et al. (2016)	42	9	21.5	19	45.2	14	33.3
All people who identify as transgender are diagnosed with gender dysphoria. *(Answer: False)*	Coleman et al. (2022)	42	8	19.1	14	33.3	20	47.6

Table 5. Self-reported knowledge and comfort with LGBTQ+ topics (n=41)

Topics	*M*	*SD*	*Mdn*	*IQR*	Skewness
Knowledge					
Process of coming out for LGBTQ+ people	3.1	1.25	3	2	0.096
LGBTQ+ culture	3.2	1.16	3	2	-0.47
LGBTQ+ health issues	3	1.20	3	2	0.181
Role of SLP in LGBTQ+ healthcare	3	1.21	3	2	-0.137
Voice feminization/masculinization	2.6	1.27	2	3	0.206
Comfort					
Process of coming out for LGBTQ+ people	3.8	1.26	4	2	-1.071
LGBTQ+ culture	3.9	1.14	4	2	-0.802
LGBTQ+ health issues	3.8	1.20	4	2	-1.016
Role of SLP in LGBTQ+ healthcare	3.8	1.32	4	2	-0.762
Voice feminization/masculinization	3.3	1.43	3	3	-0.207

Note. Scale is 1 – 5; a higher number indicates more knowledge/comfort.

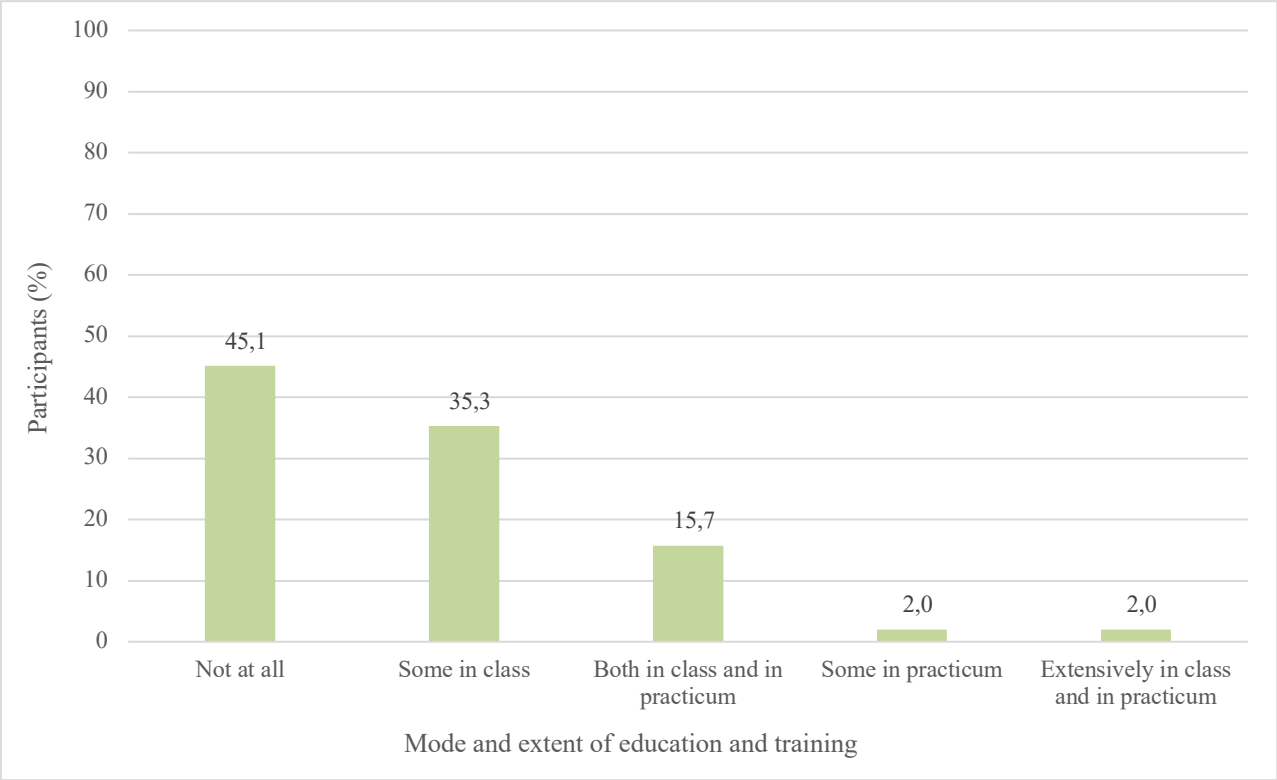

Figure 1. Mode and extent of TVCT education and training in qualifying degree curriculum (n=51)

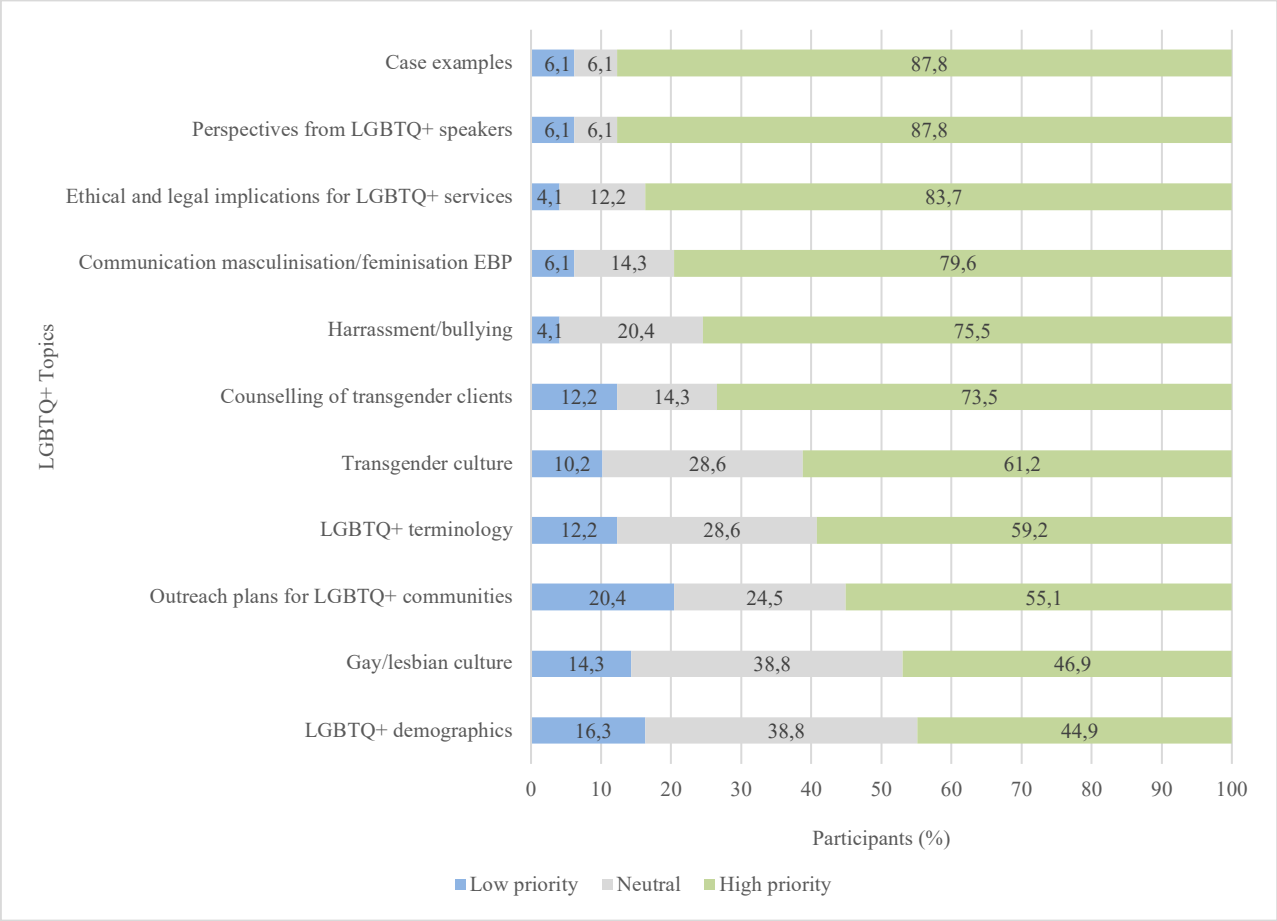

Figure 2. Priority scores for LGBTQ+ topics to be addressed in training (n=49)

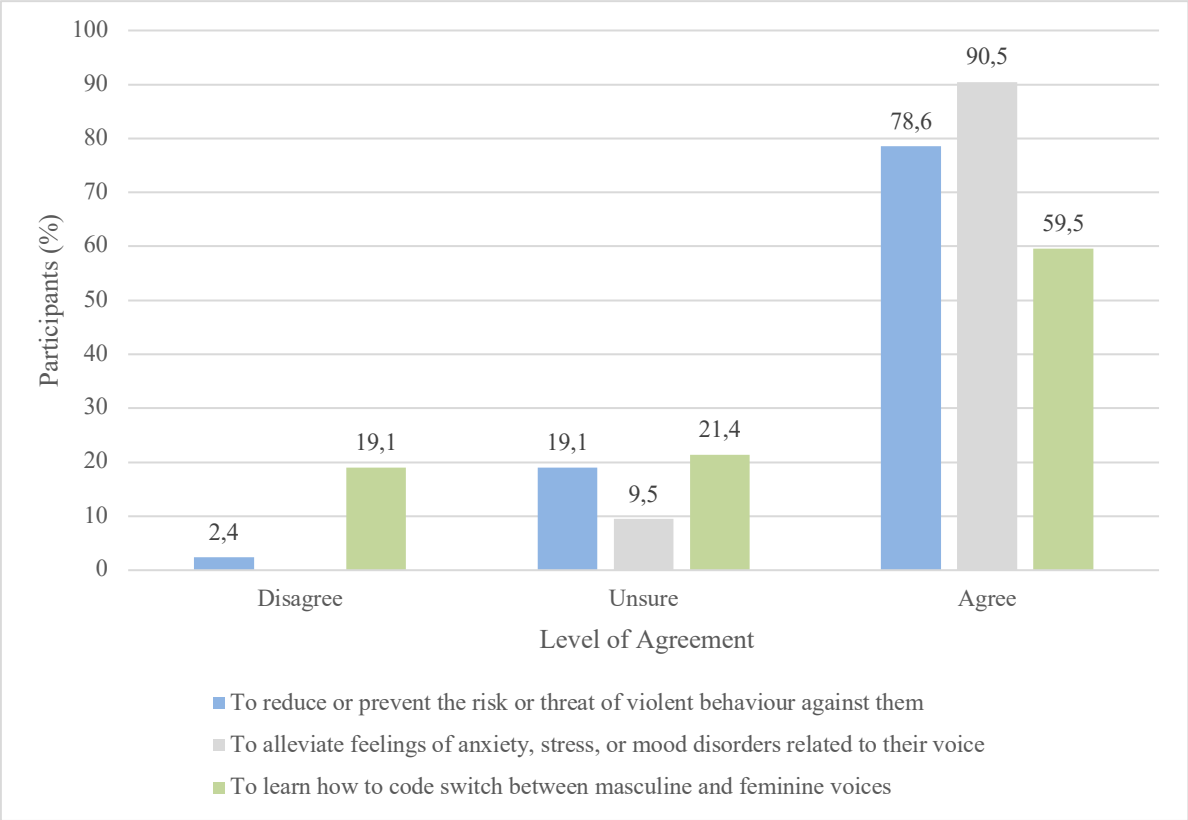

Figure 3. Perceptions of why transgender people might pursue voice therapy services (n=42)

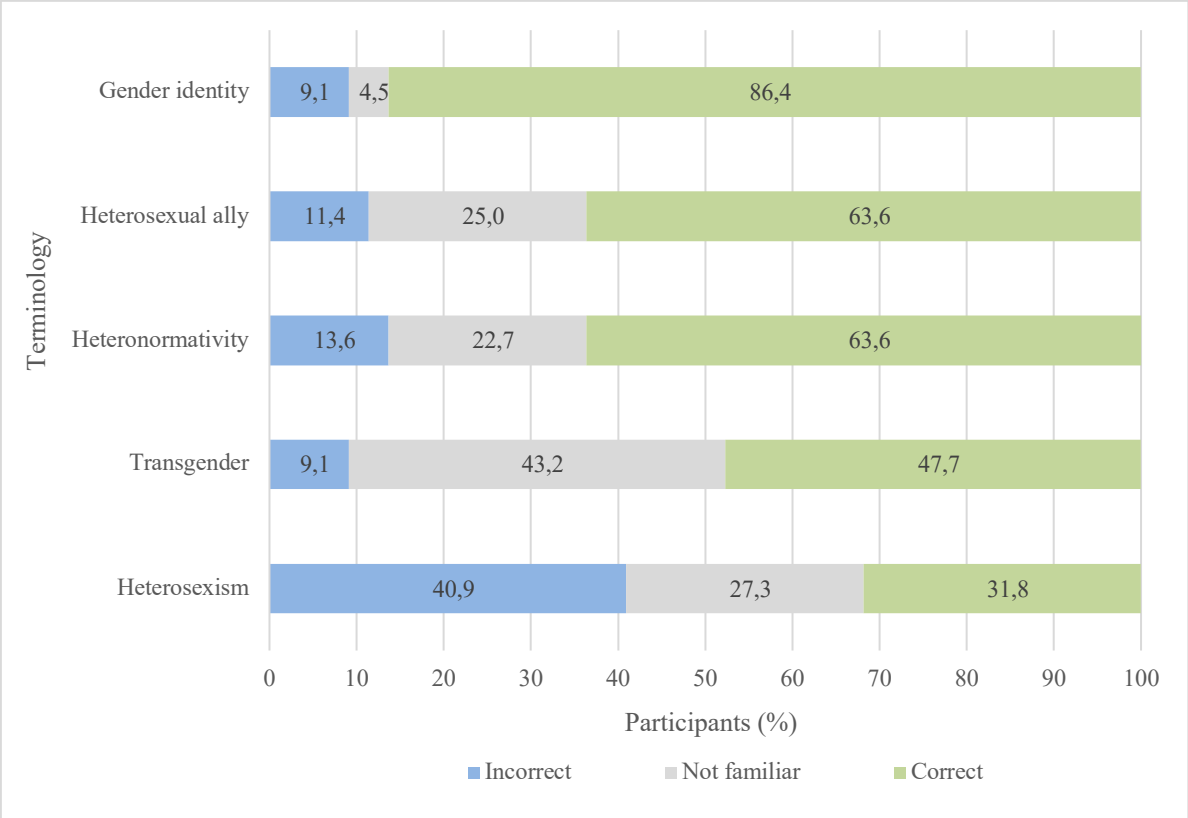

Figure 4. Knowledge of LGBTQ+ associated terminology (n=44)

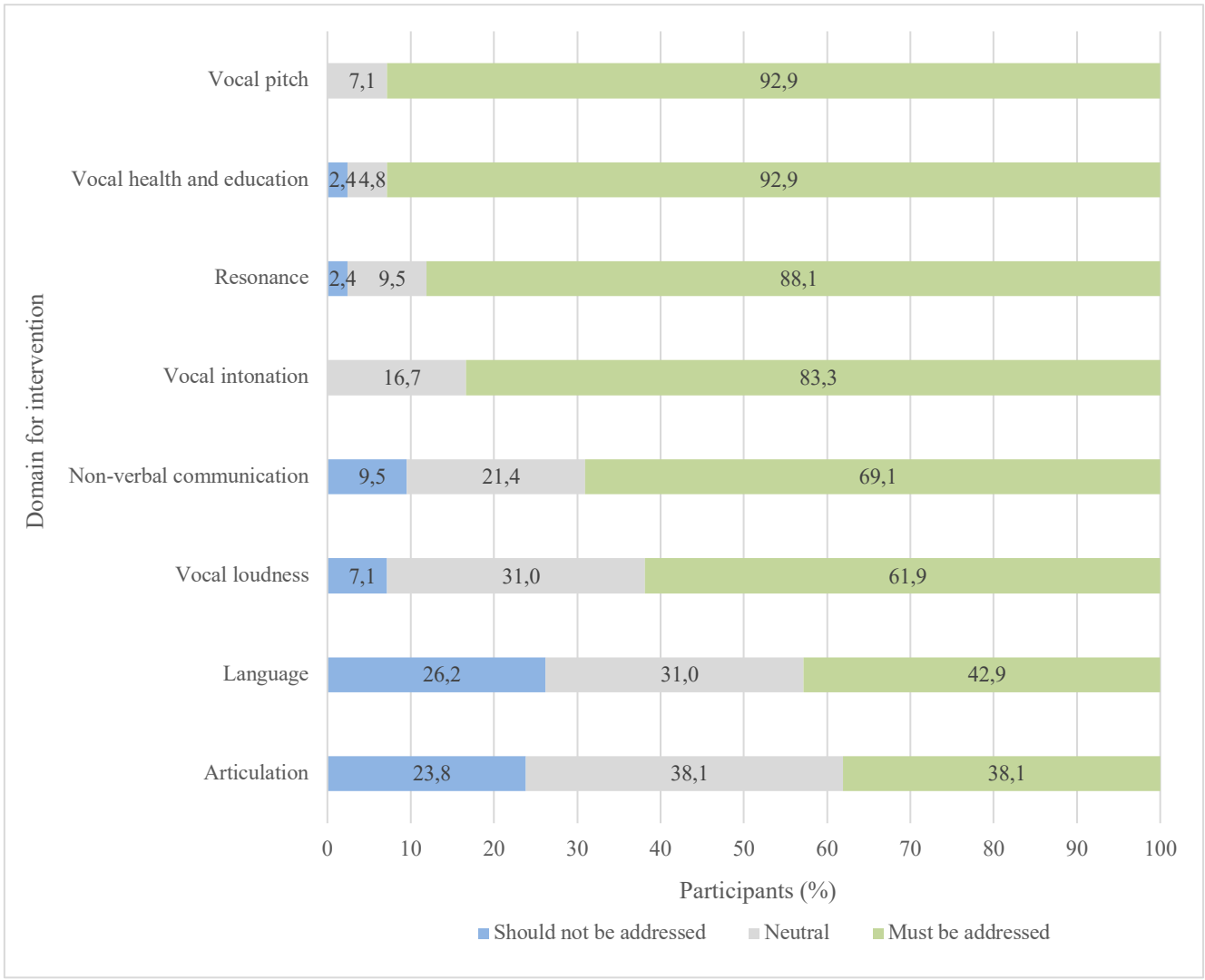

Figure 5. Priority score for TVCT domains of intervention (n=42)

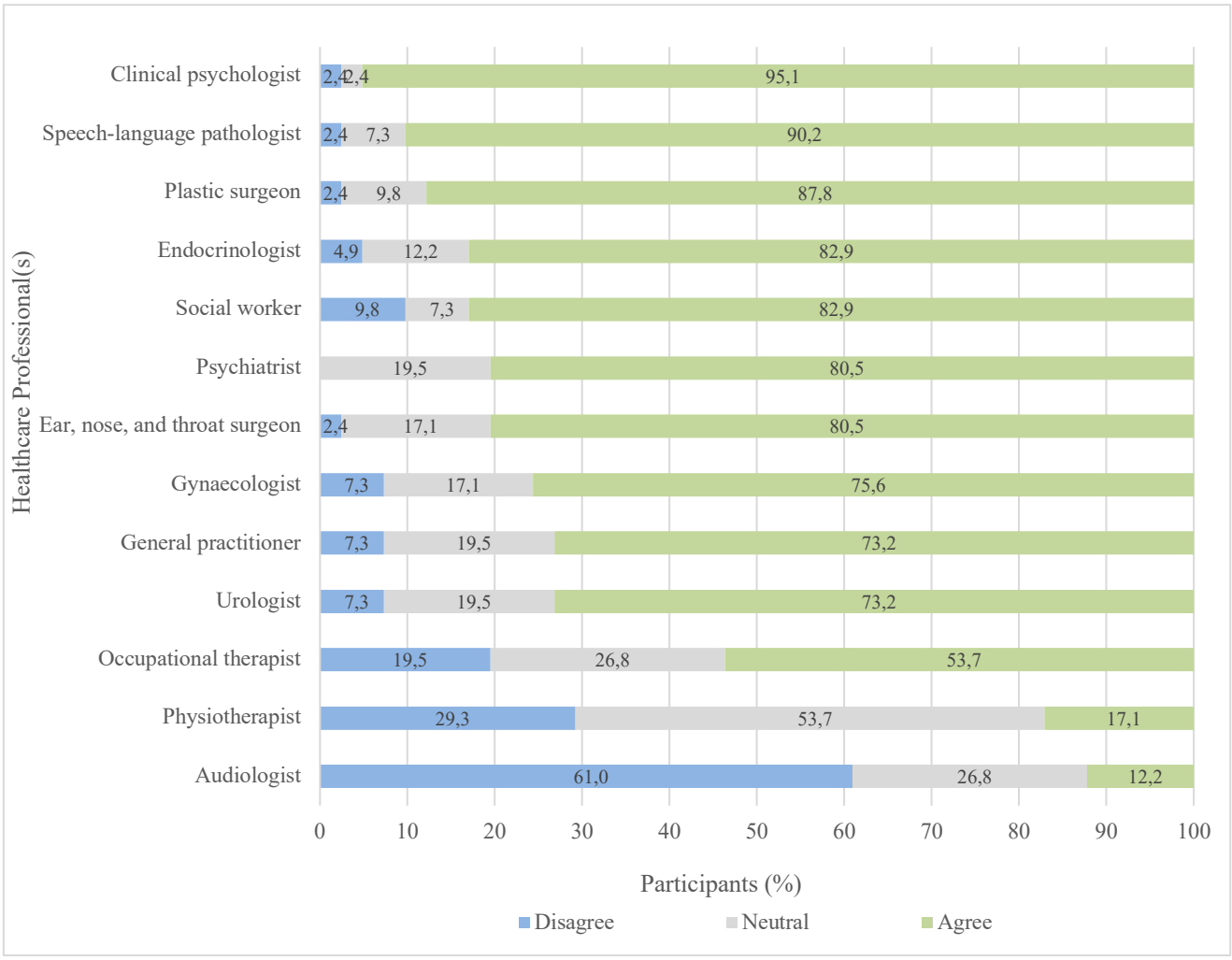

Figure 6. Priority scores for healthcare professional that form part of transitioning team (n=41)