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RESEARCH REPORT

Approaches to tracheoesophageal voice rehabilitation: a survey of the UK and Irish speech and language therapists' current practice and beliefs

Freya Sparks[1,2] | **Lucy Dipper**[1] | **Margaret Coffey**[3] | **Katerina Hilari**[1]

[1]Department of Language and Communication Sciences, City, University of London, London, UK

[2]Barts Health NHS Trust, London, UK

[3]Imperial College Academic Health Science Centre, London, UK

Correspondence
Freya Sparks, Department of Language and Communication Sciences, School of Health Sciences, City, University of London, Northampton Square, London EC1V 0HB, UK.
Email: Freya.sparks@city.ac.uk

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Abstract

Background: After total laryngectomy, surgical voice restoration is used to establish communication via tracheoesophageal voice prosthesis. Once voice is established, there is a paucity of information on what speech and language therapists (SLTs) should do to improve tracheoesophageal voice quality to ensure functional communication. No existing surveys or studies investigate this specific question. There is also a disconnect between guidelines, knowledge and clinical practice, whereby clinical guidelines stipulate the requirement for SLT intervention, but do not detail what this entails in the rehabilitation context.

Aims: (1) To advance understanding of current clinical practice beyond voice prosthesis management and care. (2) To explore what approaches are implemented in clinical practice across the UK and Republic of Ireland to rehabilitate tracheoesophageal voice. (3) To investigate the barriers and facilitators to provision of tracheoesophageal voice therapy.

Methods & Procedures: A self-administered 10-min online survey was developed using Qualtrics software and piloted before dissemination. Survey development was informed by the Behaviour Change Wheel to identify barriers, facilitators and additional factors contributing to SLTs' provision of voice therapy to tracheoesophageal speakers. The survey was disseminated via social media and professional networks. Eligibility criteria included SLTs with at least one year post-registration experience and with experience of working with laryngectomy in the past 5 years. Descriptive statistics were used to analyse closed answer questions. Open question responses were analysed using content analysis.

Outcomes & Results: The survey received 147 responses. Participants were representative of the head and neck cancer SLT workforce. SLTs believe that tracheoesophageal voice therapy is an important aspect of laryngectomy rehabilitation; however, there was a lack of knowledge about therapy approaches and

insufficient resources for implementing therapy. SLTs expressed a desire for more training, specific guidelines and a stronger evidence base to inform clinical practice. Some SLTs expressed feelings of frustration and lack of acknowledgement for the specialist skills required to undertake laryngectomy rehabilitation and tracheoesophageal work in general.

Conclusions & Implications: The survey identifies the need for a robust training approach and detailed clinical guidelines to promote consistent practice across the profession. The evidence base within this clinical area is emergent, hence there is a need for increased research and clinical audit to inform practice. Under-resourcing was highlighted, which should be considered in service planning to ensure that adequate staff, access to expert practitioners or time ring-fenced for therapy are available for tracheoesophageal speakers to receive the support they require.

KEYWORDS

adults, head and neck cancer, laryngectomy, practice, speech and language therapy, voice

WHAT THIS PAPER ADDS

What is already known on this subject

- Total laryngectomy results in life-altering changes to communication. Clinical guidelines advocate for speech and language therapy intervention; however, there is no clear information on what SLTs should do to optimize tracheoesophageal voice and the evidence base to support practice is lacking.

What this study adds to existing knowledge

- This survey identifies what interventions SLTs provide in clinical practice to rehabilitate tracheoesophageal voice; and it explores the barriers and facilitators that influence the provision of tracheoesophageal voice therapy.

What are the potential or actual clinical implications of this work?

- Specific training, clinical guidelines, increased research and audit are required to support clinical practice in laryngectomy rehabilitation. Service planning should address the under-resourcing of staff, expert practitioners and therapy allocated time.

INTRODUCTION

There is a paucity of information on what speech and language therapists (SLTs) should do, or currently do, in voice therapy to optimize tracheoesophageal voice quality, and no existing surveys or studies investigate this specific question. Hence, there is a disconnect between guidelines, knowledge and clinical practice, whereby clinical guidelines stipulate the requirement for SLT intervention, but do not detail what this entails in the rehabilitation context. Furthermore, there is no established rehabilitation protocol within head and neck SLT practice which could provide professional consensus. Gaining a picture of current the UK and Irish practice is therefore an essential foundation for the advancement of clinical interventions.

Current guidelines identify the role of SLTs in laryngectomy care, however, detail on the key components of rehabilitation is not elaborated on. British Association of Head and Neck Oncologists' (BAHNO) standards state all head and neck cancer units should have a named SLT with

specialist surgical voice restoration skills (BAHNO, 2020). Similarly National Institute for Clinical Excellence (NICE) guidance advises that an SLT specializing in head and neck cancer should be available for all patients with impairment to communication or swallowing (NICE, 2004). The clinical guidelines of the Royal College of Speech and Language Therapists (RCSLT) (2005) contain a subsection on head and neck cancer, however the guidelines are limited in scope and rehabilitative interventions are not stated. A later RCSLT policy statement for surgical voice restoration (Evans et al., 2010) elaborates on knowledge and skills the SLT should obtain to manage and troubleshoot tracheoesophageal voice prostheses, however no further detail is provided on rehabilitation.

To date, the evidence base for communication rehabilitation after laryngectomy has focused on the surgical voice restoration method; and the impact of surgical interventions on voice quality, such as secondary myotomy (Lavertu et al., 1989) or botox (Persaud et al., 2013; Spector et al., 2013). However, botox and myotomy only enable the *acquisition* of tracheoesophageal voice. SLT support remains necessary to *optimize* tracheoesophageal voice yet there is minimal evidence to inform clinical practice.

Novel voice therapy approaches are required to support tracheoesophageal voice use (Moon et al., 2014). There is potential for transference of approaches used in laryngeal voice therapy. It is important to understand what treatment approaches and options, which are conventional practice in laryngeal voice therapy, SLTs use for tracheoesophageal speakers. Though this has not yet been explored, a small body of studies have investigated how tracheoesophageal voice could be affected by application of laryngeal voice therapy approaches which target specific aspects of voice production, such as, breathing exercises, muscle tension approaches and modification of the vocal tract.

Significant changes to breathing arise following laryngectomy. Higher lung volumes are required to initiate voicing via a voice prosthesis, which results in shorter spoken phrase length (Bohnenkamp, 2008) and reduced speaking rate, contributing to lower ratings of voice quality (Lundstrom, 2011). Improvement in pulmonary physiology has a positive impact on alaryngeal voice quality (Onofre et al., 2013; Pawar et al., 2008). Breathing exercises could therefore be seen as an important factor in voice therapy for people with laryngectomy.

Muscle tension is a common cause of laryngeal voice disorders, treated with massage and myofascial release techniques (Mathieson, 2011). Upper body movement is restricted by myofascial changes following head and neck surgery (Terrell et al., 2000), therefore these techniques could improve voice production in people with laryngectomy.

Targeted modification of subsections of the vocal tract is commonplace in laryngeal voice therapy. Estill Voice Training (Estill et al., 2005) uses this approach overtly to elicit change in voice production by teaching the speaker to finely control movements of vocal tract structures. Studies have advocated for research into the potential of this approach on improving alaryngeal voice quality (Hinni & Crujido, 2013).

Existing surveys of SLT practice in the field of head and neck cancer focus on the investigation of SLT training and preparedness for laryngectomy work (Caty et al., 2009; Hancock et al., 2018b, 2020a, 2020b; Melvin et al., 2001), and intervention at a service provision level (Bradley et al., 2013) or in relation to voice prosthesis insertion and care (Culton & Gerwin, 1998; Hancock et al., 2018a). SLT practice in terms of using behavioural interventions to improve the quality of tracheoesophageal voice has not been explored.

This survey explores the UK and Irish SLTs' current practice of tracheoesophageal voice rehabilitation through investigation of the experiences and views of SLTs. The aims of the survey were to advance understanding of current clinical practice beyond voice prosthesis insertion, management and care; to explore what rehabilitative approaches are being implemented in clinical practice across the UK and Ireland in the absence of a guiding evidence base; and to investigate the barriers and facilitators to provision of tracheoesophageal voice therapy. These aims were set in the context of tracheoesophageal voice therapy as a rehabilitative behavioural intervention to improve alaryngeal voice quality.

METHODS

The Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenbach, 2004) was followed to ensure transparent reporting.

Survey framework

The Behaviour Change Wheel (BCW) (Michie et al., 2011) was applied as a framework for the survey. The BCW is an established model of behaviour change theory used to identify factors contributing to implementation of practice and behaviour change in the healthcare setting. This framework has been applied previously in quantitative healthcare survey design (Behn et al., 2020; Gould et al., 2017). For behaviour to happen, the individual or group must have the capability, opportunity and motivation to achieve the behaviour (Michie et al., 2011). The core of the BCW is therefore referred to as the COM-B model.

TABLE 1 The COM-B components

Component	Subcomponent	Definition
Capability	Physical capability	Physical skill, strength or stamina
	Psychological capability	Knowledge or psychological skills, strength or stamina to engage in the necessary mental processes
Opportunity	Physical opportunity	Opportunity afforded by the environment involving time, resources, locations, cues, physical 'affordance'
	Social opportunity	Opportunity afforded by interpersonal influences, social cues and social norms that influence the way we think about things
Motivation	Reflective motivation	Reflective processes involving plans (self-conscious intentions) and evaluations (beliefs about what is good and bad)
	Automatic motivation	Automatic processes involving emotional reactions, desires, impulses, inhibitions, drive states and reflex responses

Source: Adapted from Michie et al. (2014).

The components of capability, motivation and opportunity each include subcomponents which explore different aspects (Table 1).

The BCW is further divided into the Theoretical Domains Framework (TDF). The TDF explores factors across 14 domains that influence behaviour, for example, knowledge or social influences. Each domain of the TDF maps on to a component of the COM-B (Cane et al., 2012). The number of domains within the TDF is a potential limitation when applying the framework to questionnaire development (Huijg et al., 2014). Within the confines of this survey, it was not possible to include sufficient questions to analyse each specific domain of the TDF individually. Questions were therefore analysed by the overarching components of capability, opportunity and motivation. Following a systematic review of qualitative studies which used the TDF, McGowan et al. (2020) proposed that the framework be applied in a flexible format to ensure its use is optimized in qualitative research.

Survey development

A 35-item self-administered online open survey was designed using the Qualtrics XM survey platform. Demographics questions ($n = 7$) were adapted from a previous survey of the UK SLTs' clinical practice (Behn et al., 2020). Survey items aligned to capability ($n = 12$), opportunity ($n = 5$) and motivation ($n = 11$) and explored theoretical knowledge, clinical training and practice, barriers and facilitators. Three questions from Culton and Gerwin's (1998) survey were used. Remaining questions were developed by the research team in a three-round iterative process and piloted with seven SLTs identified through purposive sampling. The SLTs had varying levels of experience with laryngectomy and worked across different settings and cancer centre types. Mean average time to completion in piloting was 9.5 min. The full survey, with mapping of the items onto the COM-B model, is presented in Appendix 1 in the additional supporting information.

Eligibility and consent

Participants were SLTs working in the UK or Republic of Ireland (ROI) with at least 1 year of post-qualification experience, current registration with the Health and Care Professions Council or CORU and experience of working with people with laryngectomy within the last 5 years. The survey received ethical approval from (anonymised). Informed consent was required to take part in the survey. A second optional consent was requested for the use of anonymised quotations. No incentives were offered for participating in the survey.

Sample size

The survey aimed to recruit at least 100 participants. As there is no definitive list of the UK and ROI SLTs who work with laryngectomy, consideration was given to the membership count of the Clinical Excellence Networks (CENs) for Head and Neck Cancer, which is 265 SLTs (personal communication with K. Behenna, 14 July 2021). Not all members work with laryngectomy, however. A 2013 survey of the UK SLTs gained 72 participants (Bradley et al., 2013) and therefore the higher target of 100 participants reflects the possibility of increased numbers of head and neck SLTs since 2013, and additionally the recruitment of ROI SLTS.

Recruitment

The survey was open between 9 July and 7 November 2021. Clinicians based in the ROI were able to participate in the survey from 15 October to 7 November 2021. A second

ethical approval was obtained for the participation of ROI SLTs following expressions of interest to participate from the ROI SLT community. The survey was advertised on social media (Twitter) and disseminated via the head and neck CENs.

RESULTS

Participants

In total 147 SLTs took part in the survey comprising 69 complete responses (47%) and 71 incomplete responses (48%). Of the total, six SLTs did not meet criteria to take part and one did not consent (4.4% and 0.6% of sample, respectively). Due to the recruitment strategy, it was not possible to calculate a response rate. A response was included as incomplete if the participant answered any questions beyond the demographics questions, and as complete if they answered all the questions. Reported percentages are given out of those who responded to a question rather than the total number of participants.

Participants were representative of the SLT workforce. Responses were received from all the UK regions and ROI. Responses by region reflected the distribution of head and neck cancer centres with the highest percentage of responses from the London area (27.9%, $n = 34$). Most worked in the public sector (95.08%, $n = 116$) across multiple settings (74.6%, $n = 91$) reflecting the usual configuration of inpatient and outpatient services within the same head and neck cancer centre. Table 2 demonstrates participant characteristics.

Capability

Knowledge

The majority of participants (73.4%, $n = 69$) were not aware of any therapy approaches for improving tracheoesophageal voice production. Of those who were (26.6%, $n = 25$), therapy approaches comprised direct and indirect interventions aligned to the Van Stan taxonomy (Van Stan et al., 2015), which is a framework designed to categorize voice therapy approaches. This indicated transference of knowledge from laryngeal voice therapy. Approaches specific to alaryngeal voice were also stated, such as instrumental approaches and consideration of prosthesis and stoma care (Table 3). Most respondents were not aware of any guidelines relating to tracheoesophageal voice therapy (71.2%, $n = 79$). Where guidelines were known, the RCSLT guidelines were most frequently stated.

TABLE 2 Participant characteristics ($n = 147$)

Participant characteristics	*N*	%
Age (years)		
20–30	15	12.3%
31–40	51	41.8%
41–50	29	23.8%
51–60	24	19.7%
61–66	1	0.8%
Prefer not to say	2	1.6%
Sex		
Female	114	93.4%
Male	7	5.8%
Prefer not to say	1	0.8%
Years of experience working with laryngectomy		
≤ 2	15	12.3%
3–5	25	20.5%
6–10	27	22.1%
11–15	25	20.5%
16–20	9	7.4%
> 20	21	17.2%
Region of work		
London	34	27.9%
North-West or North-East	19	15.5%
Midlands	15	12.9%
South-East	14	11.5%
Yorkshire and Humber	5	4.1%
East of England	5	4.1%
South-West	5	4.1%
Northern Ireland	3	2.5%
Scotland	5	4.1%
Wales	4	3.3%
Ireland	13	10.6%
Work setting		
Multiple	85	74.5%
Inpatient	15	12.3%
Outpatient	11	9.0%
Community clinic or domiciliary care	5	4.2%
Sector		
Public	116	95.0%
Multiple sectors, private sector, independent practice or other setting	6	5.0%
Percentage of a typical caseload which is people with laryngectomy		
≤ 5%	18	14.7%
6–10%	20	16.4%
11–30%	43	35.3%

(Continues)

TABLE 2 (Continued)

Participant characteristics	*N*	%
31–50%	25	20.5%
51–75%	12	9.8%
> 75%	4	3.3%

SLTs were asked what knowledge and skills they felt were required to carry out tracheoesophageal voice therapy compared to voice therapy for those with an intact larynx. Dominant themes were anatomical, physiological, oncological and equipment knowledge specific to laryngectomy; approaches to therapy and assessment and allied psychological factors. Less frequent themes were knowledge of the risks of voice prosthesis management, cancer red flags, swallow function, and understanding multidisciplinary team working. A minor theme was identified which expressed the belief that this a specialist area of clinical practice which requires skills and anatomical knowledge, beyond those used for laryngeal voice therapy. The following quote evidences this view. In contrast a small subgroup reported uncertainty, stating they did not have experience of laryngeal voice therapy and therefore did not know what knowledge and skills were required. Further detail is provided in Supplementary material 1.

> This should be an advanced clinical area in my opinion—routine voice therapy is insufficient to support this cohort of patients and is potentially detrimental to a vulnerable patient who may end up not using their prosthesis due to a failure to acquire optimal voice.

Clinical training (skills)

Only 68.3% (n = 82) had received training in providing tracheoesophageal voice therapy. Training was largely provided through informal in-house training and supervision, renowned external courses or via stakeholders such as equipment manufacturers or charitable organizations. Where detailed, in-house training focused on voice prosthesis management and voice specific training. External course content centred on swallowing, voice prosthesis management and equipment. By contrast, a higher proportion of participants (86.3%) had received training in common psychological approaches used to support clinical practice. Advanced Communication Skills training was the most accessed training, consistent with this being a funded training regularly offered to cancer healthcare professionals.

Clinical practice (skills, memory, attention and decision processes)

SLTs were asked what clinical tools they use to assess tracheoesophageal voice quality. To ascertain the memory, attention and decision-making processes behind clinical practice, SLTs were also asked how often they used each tool (Figure 1). The majority (n = 90–93) never used voice assessment tools or outcome measures which are commonly used in laryngeal voice assessment (Voice Handicap Index: 54.4%, n = 50; GRBAS: 72.5%, n = 66). Similarly, the majority never (44.1%, n = 41), or only occasionally (32.3%, n = 30), used the Sunderland Tracheoesophageal Voice Perceptual Scale (SToPs), (Hurren et al., 2019) to assess tracheoesophageal voice, despite this being specifically designed and validated for tracheoesophageal voice. A small number of participants (n = 9) reported use of other assessments such as maximum phonation time, response to digital pressure, videofluoroscopy and manometry.

Assessment

SLTs reported a routine practice of assessing the factors contributing to voice quality (Figure 2). Factors that could be assessed subjectively or through discussion with service users were favoured. For example, breath support (60.2% assess routinely, n = 56) or hand dexterity (68.5% assess routinely, n = 63). This contrasted with factors requiring instrumentation which were assessed infrequently, such as aerodynamic assessment (9.78% assess routinely, n = 9) or tracheal manometry (5.6% assess routinely, n = 5). Most participants did not routinely take voice recordings (84.0%, n = 79).

Other assessment factors stated (n = 21) related to overall care, such as oncology treatment, or ability to communicate with emergency services (see Supplementary material 2). A small number of participants (n = 5) assessed factors which form part of the SToPs assessment (Hurren et al., 2019). It was not known whether the use of subsections in isolation was intentional, or due to unfamiliarity with the content of the assessment.

Therapy approaches

Within clinical practice breathing exercises (27.2%, n = 78), articulation (20.2%, n = 58), deconstriction (19.9%, n = 57), projection or volume approaches (16.4%, n = 47) were frequently used interventions. Few participants (7.7%, n= 22) described other approaches such as posture, phrasing and occlusion practice; or stated they did not carry out therapy (n = 4).

TABLE 3 Therapy approaches stated by participants ($n = 21$)

Type of approach	Examples provided by participants
Direct interventions	Breathwork: diaphragmatic breathing, breath support, pacing, accent
	Postural alignment
	Deconstriction of muscle tension and relaxation
	Articulation, beatboxing
	Volume and projection techniques
	Semi-occluded vocal tract therapies, flow phonation
	Stemple's vocal function exercises
	Manual manipulation
	Strapping or manual pressure
Indirect interventions	Scaffolding of therapy tasks
	Reflux management
	Review of voice prosthesis/baseplate/heat moisture exchanger
	Promoting voice prosthesis care
Instrumental	Biofeedback through videofluoroscopy, manometry, audio recording or aerodynamic assessment
	Expiratory or inspiratory muscle strength training
	Assessment of stricture
	Botox

Opportunity

Environmental context and resources

Participants reported on local factors influencing the opportunity to deliver tracheoesophageal voice therapy. Insufficient clinical resources were highlighted (63.3%, $n = 57$), specifically insufficient environmental resources, time and staffing. Most respondents (95.7%, $n = 89$) did not offer a standard number of therapy sessions. Where standardized, the mean average offered was 5.3 sessions. Participants (91.0%, $n = 81$) stated that no local policies, resources or guidelines existed to inform practice. Where documents did exist ($n = 7$ responses), participants named national sources such as RCSLT, Irish Cancer Society or National Cancer Action Team guidelines.

Social influences

To understand influences within the work environment, participants were asked whether SLTs within their department routinely offered voice therapy to tracheoesophageal speakers, with 63.8% ($n = 60$) stating this did occur. In contrast, only 27.4% ($n = 26$) personally offered voice therapy routinely. External groups appeared to have a stronger influence with 79.3% ($n = 69$) of participants reporting the influence of other groups, such as CENS, Irish SLT Forums and multidisciplinary team peers.

Motivation

Intentions, belief about consequences and capability

Respondents were somewhat likely (27.4%, $n = 26$) or very likely (42.1%, $n = 40$) to provide therapy to the next voice prosthesis user that they work with, indicating the intention is present to carry out this work. However respondents ($n = 92$) expressed a lack of confidence in the outcomes of therapy with only 23.9% ($n = 22$) affirming that their intervention resulted in improved communication. Despite apparent uncertainty about outcomes, 82.0% ($n = 73$) strongly agreed or agreed that it is important in overall laryngectomy rehabilitation. Respondents also felt it was very important or important to improve the quality of tracheoesophageal voice once functional voice has been established (85.4%, $n = 73$). A small proportion of participants disagreed/strongly disagreed that tracheoesophageal voice therapy was an important component of SLT rehabilitation (1.12%, $n = 1$; 16.9%, $n = 15$); or did not think it was important to optimize tracheoesophageal voice once established (14.6%, $n = 13$).

Whilst few participants (9.5%, $n = 9$) routinely set goals relating to tracheoesophageal voice therapy; SLTs identified factors which help decision-making around working on tracheoesophageal voice quality ($n = 74$). Supplementary material 3 details the emergent themes. Dominant positive influences were patients' motivation, goals and priorities, and severity of impairment. SLTs expressed

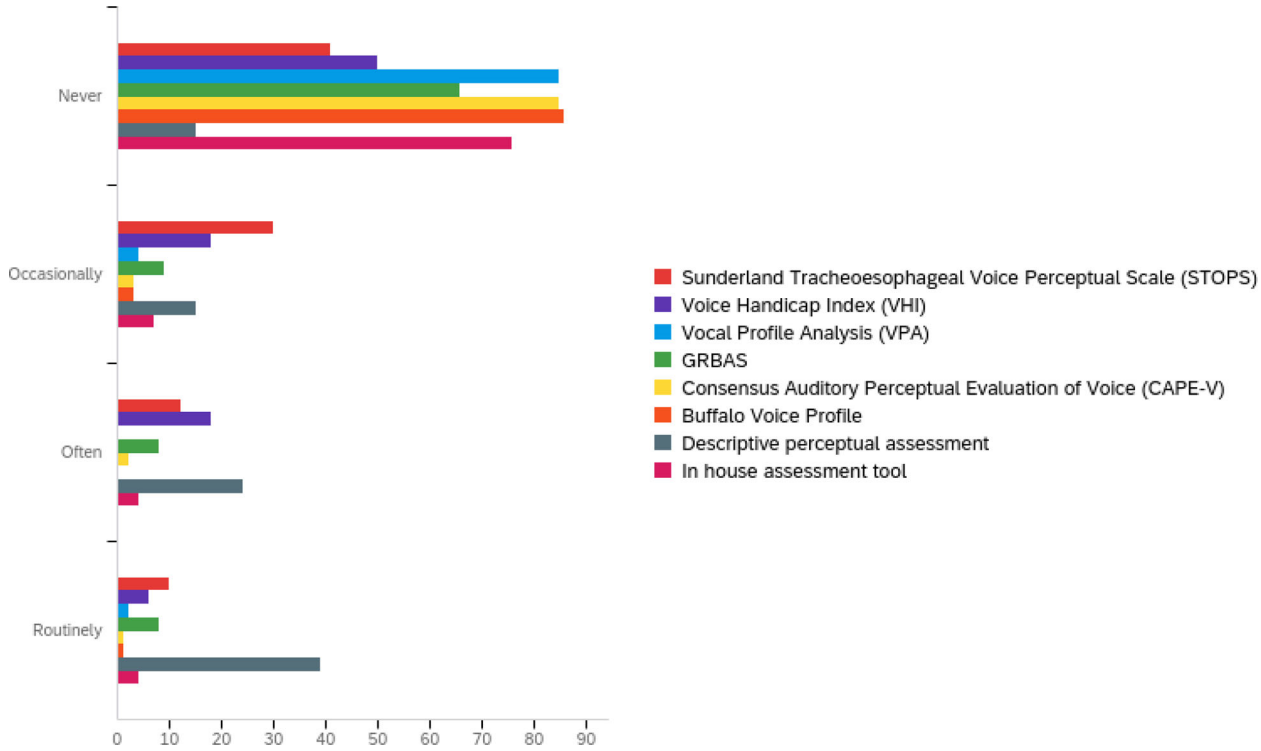

FIGURE 1 Assessment tools used by speech and language therapists (SLTs) to assess tracheoesophageal voice quality, and frequency of use ($n = 90–93$) [Colour figure can be viewed at wileyonlinelibrary.com]

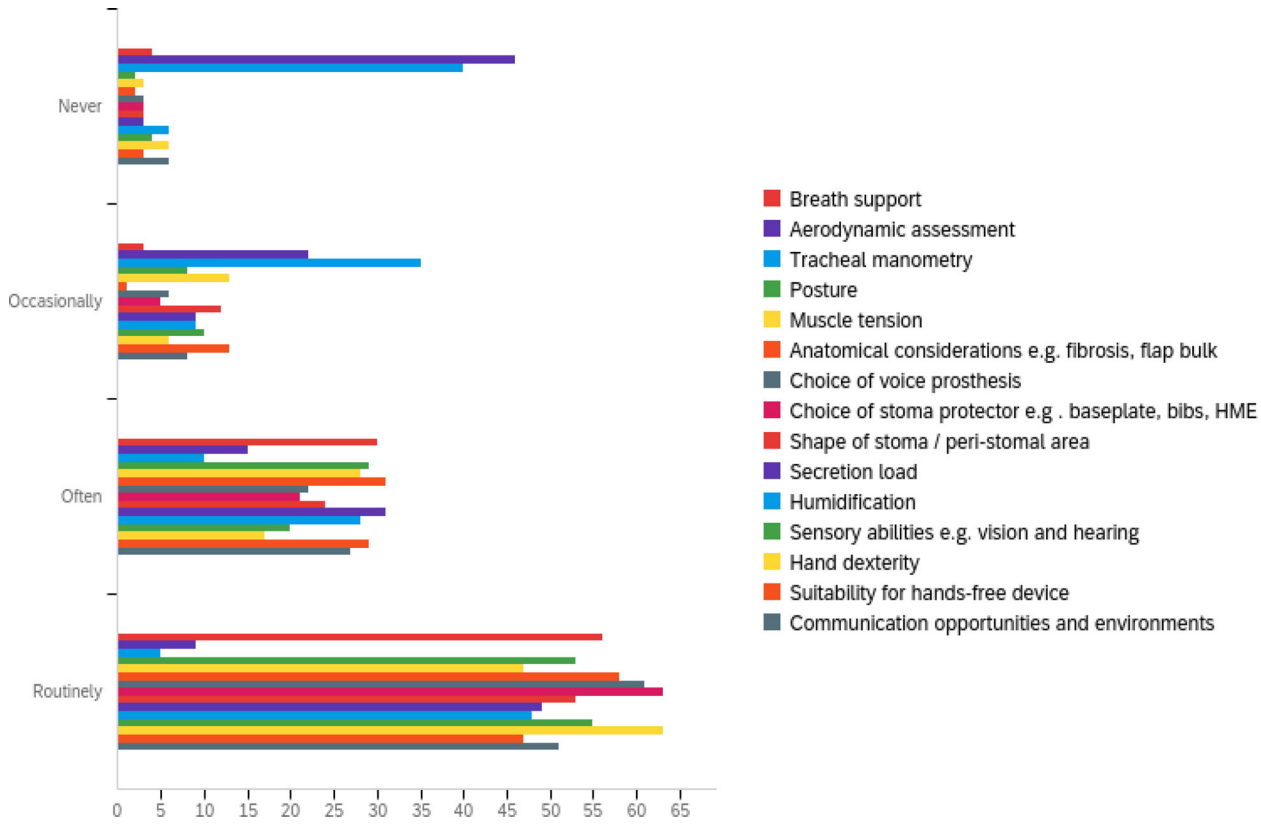

FIGURE 2 Factors assessed in addition to voice quality, and frequency of use [Colour figure can be viewed at wileyonlinelibrary.com]

greater likelihood of providing voice therapy when function did not meet the requirements of the individuals' voice. Prioritization of resources and limited belief in the potential of therapy were factors that discouraged therapy provision. Patient factors were also a discouraging influence if motivation was lacking. Participants noted that relying on patient factors to decide to provide therapy was problematic, as patients may not be aware of how therapy could help.

> This is usually driven by patient request, but I do not feel this is necessarily a good way to do it. Patients don't always understand what can be achieved with their voice, what is realistic or what we can do to help so will not raise concerns. We should be routinely offering and assessing this.

Emotion

Participants were asked how they felt about providing tracheoesophageal voice therapy ($n = 72$). A duality exists for many SLTs, in which positive feelings towards carrying out therapy were expressed alongside a negative descriptor, such as apprehension. Overall positive descriptors were used more frequently than negative or neutral descriptors. Several participants expressed the desire to extend skills and clinical practice knowledge. Frustration was the most frequently stated negative descriptor ($n = 5$) relating to resource barriers or the perception that voice work was less valued than prosthesis care.

> Anxious and frustrated about capacity within a stretched clinical team. [...] Concerned that ability to produce functional SVR voice is not appreciated and valued as equally and is perhaps more important than competency in prosthesis placement.

Participants described challenges encountered when providing tracheoesophageal voice therapy ($n = 73$). Dominant themes were again, patient specific factors such as reduced motivation, readiness to engage in therapy, delayed healing and psychosocial barriers (see Supplementary material 4). Lack of clinical knowledge, insufficient resources and staffing issues were also reported. A small number of participants reported the negative influence of colleagues, where departmental culture was to not offer tracheoesophageal voice therapy.

> It is often low on my patients' agenda. This may be a demographic issue as most of my patients don't work, live alone, already struggle with all their cancer appointments, have financial difficulties [...].

Participants felt challenges could be helped with ($n = 66$) clinical knowledge, increased evidence base, clinical and staff resources, and acknowledgement of the need for expert staff and specialist posts.

Social/professional role and identity

Perception of the professional role and SLT identity was explored. Of participants, 70.0% ($n = 63$) were involved in evaluating suitability for tracheoesophageal puncture, and 92.2% ($n = 83$) troubleshooted problems experienced by tracheoesophageal speakers, indicating a key role of SLTs within laryngectomy care. The majority (86.7%, $n = 78$) often or always felt valued by their multidisciplinary team.

Results summary

Table 4 summarizes the survey results in relation to their corresponding COM-B component and theoretical domain.

DISCUSSION

This survey explored the current picture of tracheoesophageal voice therapy within the UK and ROI clinical practice; and the barriers and facilitators that SLTs encounter when undertaking this rehabilitative work. The survey findings will be discussed in terms of their relationship to capability, opportunity and motivational factors.

Capability

Barriers to practice centred on insufficient training, lack of clinical guidelines and evidence and the absence of a specific tracheoesophageal voice rehabilitation approach. As such, responses were not reflective of poor knowledge amongst SLTs, but rather of a gap in knowledge, which was expected in the context of the current scarce evidence base. The requirement for more research to guide clinical management has been reported in surveys of SLTs working in other clinical areas (progressive dysarthria, Collins & Bloch, 2012; paediatric cerebral palsy, Watson & Pennington, 2015; primary progressive aphasia, Volkmer et al., 2019; and non-progressive dysarthria, Conway & Walshe, 2015).

TABLE 4 Summary of results by COM-B component and domain

COM-B component	Theoretical domain	Identified outcomes
Physical capability	Physical skills	• Insufficient training provision
Psychological capability	Knowledge	• No existing specific therapy approaches • Low awareness of existing guidelines • Guidelines do not provide detail on what rehabilitation should entail • Lack of specific training courses for tracheoesophageal voice
	Cognitive skill	• Belief that specialist skills and knowledge are required
	Memory, attention and decision processes	• Infrequent use of outcome measures • Infrequent use of objective assessments • No routine practice of voice recording • Routine practice of perceptual assessment
Physical opportunity	Environmental context and resources	• Insufficient clinical resources • Insufficient staffing • Insufficient experienced speech and language therapists (SLTs) • Lack of local policy or guidelines
Social opportunity	Social influences	• No standard number of sessions offered • Strong influence of external groups • Negative influences 'culture of not offering therapy'
Reflective motivation	Social/professional role and identity	• SLTs hold key role in laryngectomy care decisions • SLTs feel valued by their multidisciplinary team
	Belief about capabilities	• Uncertainty about the outcomes of therapy
	Intentions	• Intention to carry out tracheoesophageal voice therapy is present • Intention to carry out voice therapy is influenced by patient factors
	Goals	• Lack of routine goal-setting
	Beliefs about consequences	• Belief that tracheoesophageal voice therapy is important • Uncertainty about potential for therapy gains
Automatic motivation	Emotion	• Motivation and interest are present • Frustration about resourcing or how voice therapy is prioritized • Anxiety related to clinical skills
	Reinforcement	• Feeling that SLT skills are not always fully valued • Desire for more acknowledgement of skills

Results aligned with surveys of SLTs practice across clinical areas (acquired brain injury, Behn et al., 2020; aphasia, Cruice et al., 2020), where lack of skills, knowledge and training were among barriers to therapy implementation. SLTs expressed a clear belief of what knowledge and skills were required for tracheoesophageal voice rehabilitation. Clinical knowledge of laryngeal voice therapy was seen as a basis to tracheoesophageal voice work, and transference of laryngeal approaches could be a facilitating influence alongside additional knowledge. However, SLTs additionally identified the oncological and patient factor knowledge required to enhance their laryngeal voice therapy experience. This was consistent with Hancock et al. (2018b) where survey participants expressed a desire for advanced level training to support tracheoesophageal voice work. The lack of structured, specific training courses is problematic and, if implemented, could support consensus in clinical practice.

Outcome measures were not used routinely, which differs from SLT practice in other clinical areas (primary progressive aphasia, Volkmer et al., 2019; non-progressive dysarthria, Conway & Walshe, 2015). This may reflect the few laryngectomy-specific measures available or their unfamiliarity to the UK and ROI clinicians, for example, the Self-Evaluation of Communication Experience after Laryngectomy (SECEL) (Blood, 1993). Few participants reported using the SToPs despite this being a validated assessment specifically for tracheoesophageal voice. This could reflect the relatively long completion time of the SToPs, where time has been demonstrated as a barrier to use of outcome measures in other areas of clinical practice (Worrall & Egan, 2013).

Participants did not routinely use in-house assessments or outcome measures designed for laryngeal voice therapy as an alternative. This may be due to the lack of validation of these measures within the laryngectomy population. Descriptive perceptual assessment was used most routinely, however further exploration is required to understand how SLTs describe features of tracheoesophageal voice quality in the absence of a consensus

perceptual measure such as the GRBAS scale (Hirano, 1981) and tracheoesophageal specific voice norms. This presents a direction for future research.

Therapy approaches used in clinical practice aligned to common areas of laryngeal voice therapy such as breathwork, muscle tension, articulation and volume. A notable difference was the absence of work on resonance and pitch (respectively, 5.92% and 2.79% of participants targeted these areas). This may suggest limited belief in the potential to modify these aspects of tracheoesophageal voice, however tonal language tracheoesophageal speakers have been found to modify pitch (Yan et al., 2012). In most areas there was consistency between areas assessed and approaches used in practice, however there was disparity regarding patient factors. For example, participants reported assessing motivation and mood, yet therapeutic approaches to address this were not reported. This accords with Northcott et al. (2016), which showed a lack of confidence amongst SLTs in addressing psychological needs in the aphasia population, despite the belief that it was part of their role.

Opportunity

The opportunity domain explored resourcing required for clinical practice and cultural or social influences. Nearly two-thirds of participants reported insufficient resources to undertake tracheoesophageal voice work, citing lack of time, experienced staffing and environmental resources. This accords with previous surveys of SLT practice (Behn et al., 2020; Conway & Walshe, 2015; Cruice et al., 2020) and of the NHS Long Term Plan finding (NHS, 2019) that SLTs are in short supply nationally. Evidence submitted by the RCSLT to the Health and Social Care committee highlighted that this shortage is particularly prevalent in head and neck/ENT specializing SLTs and has been exacerbated by the post-COVID pandemic backlog (RCSLT, 2021). RCSLT data showed that half of head and neck cancer multidisciplinary teams surveyed did not meet BAHNO staffing standards. The RCSLT report specifically highlights the multiple clinical competencies that Head and Neck SLTs must achieve to be independent practitioners, noting that 'substantial investment in post-graduate training and supervision' is required (RCSLT, 2021, p. 6).

Exploration of social and cultural influences highlighted challenges. Participants (91.07%) typically reported that no local guidelines existed within their services to shape clinical practice with tracheoesophageal speakers. For a similar proportion of participants there was no set number of therapy sessions offered, which may demonstrate a resource issue or a culture of not formalizing this work. In a similar finding, Bradley et al. (2013) advocated for improved education and nationally agreed management protocols, albeit in relation to voice prosthesis management.

There was a reported incongruence between the percentage of SLTs who personally provided routine tracheoesophageal voice therapy and whether this occurred routinely within their department. Here the percentage of departments offering therapy routinely was higher than that reported in personal practice. This may indicate that SLTs are not being strongly influenced by the cultural norms within their departments, or that the opportunities they do have are insufficient to shape clinical practice. In contrast, social and cultural influences external to the department were a more significant factor. Over two-thirds of participants stated that their practice was influenced by groups such as Clinical Excellence Networks (CENs), wider MDT peers and networks or social media. This may reflect the strong presence on Twitter of the Head and Neck SLT community. The role of Twitter in healthcare education is emerging. Benefits have been highlighted in the ability to rapidly share knowledge and increase reach of new evidence without geographical barriers (Thamman et al., 2020); and as a source of free-to-access learning, notwithstanding professional and quality considerations (Van Schaijik et al., 2021).

External networks of support may be particularly relevant outside of major head and neck centres where SLTs could be the sole clinician seeing laryngectomees or working outside of a multidisciplinary team. The risk of isolation outside of major head and neck centres was previously identified in the Australian setting (Hancock et al., 2018b). The positive regard of external influences is important and could inform strategy for developing and disseminating research, clinical guidelines or training via social media, existing SLT networks and CENs.

Motivation

Belief about the outcome of intervention was guarded. This may reflect the lack of an evidence base to inform what effective tracheoesophageal voice therapy should look like. Despite uncertainty, participants still felt provision of therapy was important. This suggests that SLTs see potential in providing support to tracheoesophageal voice users and further emphasizes the need for practice guidelines to build confidence in outcomes. A minority strongly disagreed that tracheoesophageal voice therapy is an important part of laryngectomy rehabilitation; and a similar number shared experience of unsuccessful attempts to rehabilitate the voice. It is a limitation of the survey that the relationship between experiences and opinion were not explored further, this would be a direction for future research.

Few participants routinely set goals for tracheoesophageal voice work. Goal-setting by SLTs has been explored in other clinical contexts. Practice was influenced by low knowledge of therapy frameworks which include goal-setting (Sherratt et al., 2011, aphasia rehabilitation); and absence of consensus on goal-setting methods (Holliday et al., 2005). Furthermore, goal-setting requires skill and effort (Parry, 2004) and is seen to be more time consuming if there is active involvement of the patient (Schoeb, 2009). This survey has highlighted lack of therapy frameworks, consensus in practice and insufficient time to carry out tracheoesophageal voice therapy, which are consistent with the evidence base as barriers to goal-setting.

In the absence of goal-setting, alternative motivational factors may play a bigger role in deciding whether to carry out tracheoesophageal voice work. Positive motivators were identified as patient readiness or own motivation; therapist's belief in their own skills or the potential for change; and the influence of the multidisciplinary team. This supports findings related to capability where low knowledge of therapy approaches was a barrier to practice; and the multidisciplinary team was influential.

Lack of patient motivation as a barrier to practice has been previously identified (Conway & Walshe, 2015). Whilst the influence of patient priority is important, this raises the risk of SLTs only providing therapy to patients who express their own motivation for it, which could present a barrier to accessing support; particularly if the patient is not aware of the function that they could achieve with their tracheoesophageal voice. Furthermore, it has been demonstrated that patient motivation is not a strong predictor of intelligibility at one year post-laryngectomy (Singer et al., 2013), therefore the decision to act on patient motivation alone is not supported. Demotivating factors mirrored positive factors whereby participants stated a lack of belief in their skills or in patient's therapeutic potential as negative indicators to offer therapy.

Participants were asked how they felt about doing tracheoesophageal voice therapy to understand if they felt sufficient motivation for the clinical practice. Motivation to provide therapy was expressed, coincident with uncertainty about how to undertake the work. A small number of participants expressed demotivating feelings, with the belief that the tracheoesophageal voice is unlikely to be amenable to change. Clinicians are more likely to implement interventions that they believe will work, based upon their evidence and validity (Lipworth et al., 2013). Moreover, low workforce morale impacts negatively on patient care (Day et al., 2006). Attending to the causal factor of uncertainty on how to carry out tracheoesophageal voice therapy and improving the evidence, is therefore pertinent.

Participants demonstrated that their wider professional role was integral to laryngectomy care, through the high percentage who were involved in assessing and managing problems encountered by tracheoesophageal speakers. This was a positive finding, in contrast with a survey of SLTs working within tracheostomy (Ward et al., 2012), where only half of respondents expressed a defined role in tracheostomy dysphagia practice. Participants felt valued by their multidisciplinary teams, which can be interpreted as a positive motivating factor. However, there were some (13.33%) who only occasionally felt valued. This is in keeping with the small subgroup of respondents who expressed, throughout the survey, that their skills and the requirement for specialist posts was insufficiently acknowledged by colleagues.

Overall challenges to tracheoesophageal voice work were highly consistent with responses to previous questions. Dominant themes were again expressed as the lack of clinical knowledge and uncertainty on what to do in therapy, insufficient resourcing in terms of time, equipment and staffing; and patient factors. The theme of staffing was expressed both as the need for experienced staff; and the negative influence of staff who believed that tracheoesophageal voice therapy was not indicated.

In summary, participants were motivated to carry out tracheoesophageal voice therapy despite uncertainty about the results they may achieve. Participants were more motivated by belief in the skills that they do have, the potential for change and patient's motivation; rather than influences relating to routine aspects of practice. This suggests that reflective motivation is a significant factor.

Participants had a clear sense of what would support them to overcome these challenges. Key areas were identified as the need for more training, specialist courses and robust clinical guidelines to inform practice, in keeping with previous surveys of SLT practice (Collins & Bloch, 2012; Cruice et al., 2020; Hancock et al., 2020b). Participants wanted increased resourcing to ensure there was sufficient time and staffing to carry out tracheoesophageal work and there was a call for a stronger evidence base and multicentre audit of clinical outcomes.

CONCLUSIONS

This survey captured the views of the UK and ROI SLTs who work with tracheoesophageal speakers. The key findings of the survey were that SLTs were motivated to provide tracheoesophageal voice rehabilitation. They believed that it is an important part of laryngectomy rehabilitation and additionally that it is important to optimize voice quality once tracheoesophageal voice is established. There was however an absence of sufficient training and of clinical guidelines to support acquisition of knowledge and clinical practice. This leads to uncertainty amongst SLTs about how best to approach tracheoesophageal

voice rehabilitation and what approaches might be effective.

The survey findings point towards the need for a robust training approach and detailed clinical guidelines or protocols to promote consistent practice across the profession, drawing upon the positive influence of the head and neck SLT community to create impact. The evidence base within this clinical area is emergent hence there is a need for increased research and clinical audit to inform what best practice should look like.

At a service level SLTs expressed significant under-resourcing and the belief that the depth of their skills was not always acknowledged or sufficiently valued. This should be considered in service planning to ensure that resourcing is not a barrier to tracheoesophageal speakers receiving the support they require, and that they are able to maximize their function in the face of a significant challenge to their communication.

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in the additional supporting information of this article.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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