

Enhancing Voice Therapy with Digital Resources

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Introduction

Effective voicing requires the coordination and control of the respiratory, phonatory and resonatory subsystems [1]. Voice disorders may result in a breakdown in one or more of the voicing subsystems, which may disrupt the normal vibratory function of the vocal folds, or the power and endurance required for typical voicing tasks [3]. These changes can lead to perceptual changes to the voice quality, or symptoms of a voice disorder such as vocal fatigue and pain, which often results in reduced quality of life, particularly in terms of social interaction, emotional well-being, and ability to work [4].

Speech pathology behavioural voice therapy, is considered the gold standard for managing a range of voice disorders which has been shown to significantly improve vocal quality and patient-reported outcomes [5, 6].Voice therapy often incorporates abstract imagery, or specific vocal sounds to help patients produce safe and effective laryngeal patterns [7]. Voice therapy allows patients to achieve correct vocal posture (e.g. resonant voice therapy encourages patients to imagine sensations like “buzzing” in the face to promote efficient vocal fold vibration and closure with minimal effort) [7]. Voice therapy typically involves guided sessions with a speech pathologist, complemented by daily home practice to reinforce new vocal behaviours [5, 8]. This home practice is essential for achieving generalisation and carryover of skills into everyday communication [8].

In recent years, allied health have used visual aids, specifically videos, to support home practice [9, 10]. Videos provide clear, step-by-step demonstrations of exercises, ensuring patients understand the correct techniques and can replicate them accurately at home [10]. This visual guidance helps in maintaining consistency and improving the effectiveness of therapy [10]. This approach not only enhances patient engagement but also contributes to better therapeutic outcomes by ensuring exercises are performed correctly and regularly [10, 11].

Continuous monitoring during behavioural therapy helps in identifying patterns and triggers, ensuring that therapy remains effective and responsive to the patient's needs [5, 12, 13]. Technology has significantly enhanced therapy tracking in allied health, providing tools that streamline the monitoring of symptoms and therapy outcomes. Digital solutions offer real-time tracking and visual reports, allowing therapists to stay updated on participant progress and engagement [13]. These advancements not only reduce administrative burdens for clinicians but also improve the quality of care by enabling therapists to focus more on patient-facing interactions [14].

Patients attending regular allied health outpatient sessions in a public health setting face several challenges including reduced frequency of appointments due to long wait times, geographical barriers, transport access issues and work commitments [15, 16]. Reduced attendance and engagement in therapy significantly hinders outcomes and improvement of therapy goals, particularly in voice therapy where regular practice and monitoring are crucial [15]. Reduced attendance and engagement also prevents the continuous tracking and adjustment necessary for effective treatment. Ensuring patients can attend and engage in therapy regularly is essential for achieving optimal health outcomes and improving the efficiency of allied health services [15].

Project Aims

- To develop easily accessible voice therapy audio-visual tools to help patients independently practice their voice therapy techniques
- To develop an online system capable of tracking patient voice symptoms and vocal health between therapy sessions

Method

Participants were adult consumers of Logan Hospital, referred to the Logan Hospital Integrated Ear, Nose & Throat (ENT) team and presenting with identified dysphonia. All participants were known to ENT +/- had underwent a laryngoscopy. Participants were excluded if they presented with poor English proficiency, known cognitive changes or a history of significant hearing loss. A total of no more than 50 patients were invited to participate in this study.

Voice Tracker

An online voice tracking tool was developed using Microsoft Forms with the purpose to (1) track how much patients are using their voice, (2) record current voice symptoms & (3) track voice progress and recovery over time. Data captured in the 17-question tracker included: Identifying information, talking time in minutes, times throat clearing and coughing, fluid intake, alcohol servings, frequency of symptoms & free choice responses.

Results collated from the voice tracker were electronically analysed into excel tables and sent directly to a secure shared inbox that is accessible by all Logan Hospital outpatient speech pathologists for review and monitoring. To accompany the tracking tool, we developed a written handout for clinicians to provide to patients with the QR code and link as well as a section for the clinician to indicate how frequently they would like patients to complete the tracking tool. It is estimated that the voice tracker takes no more than 10 minutes for patients to complete to ensure ease of completion each day or as prescribed by the treating clinician.

Audio-Visual Therapy Resource

A suite of voice therapy resources was developed to support home practice with a total of 9 techniques to support patients when not in therapy sessions. Techniques included: Lip & tongue trill, straw phonation, LaxVOX, Humming & Pursed Lip Breathing. Each video shows the correct technique for several common voice therapy tasks. The script for each video was checked against the Flesch-Kincaid [18] grade level scores to ensure it met the Queensland Health standard of below 7. The videos were filmed by speech pathologist from the outpatient team at Logan Hospital and were no longer than 3 minutes in duration. Patients were provided with a written handout containing the QR link to their recommended treatment video.

Patient feedback was collated for both the voice tracker and audio-visual voice therapy resource. For the Voice tracker patients were asked to provide feedback on the readability and content of the tracking tool on a 5-point Likert scale responding to 9 questions. While for the audio-visual therapy resource, patients were asked to provide feedback on the useability and content of the video resource as well as their confidence in completing home therapy tasks using the video.

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Results

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Overall satisfaction	78%	15%	5%	2%	0%
Video resource better than handout	63%	25%	10%	2%	0%
Appropriate duration of video	84%	12%	4%	0%	0%
Confidence with therapy after watching video	89%	10%	1%	0%	0%
Purpose of video clear	58%	25%	15%	2%	0%
Video presentation	88%	10%	2%	0%	0%

Figure 1. Audio-Visual Therapy Resource Survey

Results of Figure 1 reflect high consumer satisfaction with the audio-visual therapy resource. Consumers noted high satisfaction with confidence of the video helping home practice (84%), the quality of the SP modelled voice therapy (89%) and preference for a video resource over typical paper resources (63%) to support their independent practice in-between voice therapy sessions. The overall satisfaction of the audio-visual resource was high with 78% consumers rating strongly agree on the 6-question survey. Consumers noted one key area for improvement, recommending further clarity around the video rationale/ purpose (15%).

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Readability	85%	15%	0%	0%	0%
Clear layout	85%	15%	0%	0%	0%
Ease of completion on smart device	28%	45%	15%	10%	2%
Questions related to my symptoms	42%	43%	10%	5%	0%
Meaningful questions	58%	32%	10%	0%	0%
Question formatting	14%	65%	15%	5%	1%
Time to complete (less than 5 min)	42%	35%	15%	8%	0%
Recommend to others	14%	65%	15%	5%	1%
Overall satisfaction	85%	15%	0%	0%	0%

Figure 2. Voice Tracker Feedback Data

The chart in Figure 2 demonstrates high consensus from consumers with 100% of consumers noting the questions included in the tracker to be meaningful for their self voice rating. The following statements demonstrated high rating 85% (Strongly agree & agree) readability, layout, questions related to symptoms and recommend to others. There were no noted strongly disagrees, however 14% of consumers noted disagree for the following statements clear layout, ease of completion on a smart device, duration to complete and recommend to others. Overall, consumers noted high satisfaction with the voice tracker to help support their self monitoring.

Developed Resources

Audio-visual therapy resource – Lip Trill exercise

Discussion

The integration of digital tools, particularly symptom tracking form and audio-visual resources, has significantly enhanced the management and delivery of voice therapy and tracking symptom progress for voice therapy.

The use of tracking form has proven to be a vital component in managing voice disorders. The developed tool allows patients to log symptoms, monitor progress, and share real-time data with their clinicians. This continuous feedback loop enables SPs to tailor therapy plans more precisely, ensuring that interventions remain responsive to the patient's evolving needs and track progress following surgical interventions. Moreover, the convenience and accessibility of this form enhances patient engagement and accountability, contributing to more accurate assessments and improved therapeutic outcomes. Consumer feedback further supports the utility of the voice tracker form to allow for further scale and spread for other patient cohorts within the service.

The implementation of an online audio-visual resource package has had a positive impact on patient confidence and perceptions regarding home therapy. These resources, encourage independent practice and support transference of skills beyond the clinical context. The findings demonstrate high consumer confidence with independent practice and a shift in patient preferences toward more interactive and engaging formats rather than traditional paper-based resources. There was high satisfaction overall with noted feedback from the survey recommending further enhancements to improve the effectiveness of these tools to support patient practice.

Implications and Future Directions

These findings outline the importance of incorporating digital tools into voice therapy to enhance traditional care. Tracking forms and video resources not only improve clinical outcomes but also foster greater patient autonomy and satisfaction. Future initiatives will focus on expanding these tools into broader clinical settings and building on the current library of resources while considering expansion to other clinical caseloads. It is also crucial to address digital equity, noting not all patients have access to electronic devices and future projects should ensure that paper-based alternatives are available to maintain inclusivity and accessibility.

Conclusion

Patients with voice disorders often face challenges monitoring symptoms and maintaining effective home practice between weekly speech therapy sessions, which can hinder their progress. This pilot study at Logan Hospital found that integrating audio-visual resources and a voice symptom tracker improved patient engagement, confidence, and satisfaction, leading to better treatment outcomes.

QR link to voice tracker

QR link to lip trill exercise