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Telepractice or In-Person? A Randomized Controlled Trial of Vocal Warm-Up and Vocal Hygiene for Teachers

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SUMMARY

Objectives

This randomized controlled trial investigated the effectiveness of vocal hygiene education and structured vocal warm-up exercises in improving voice quality and reducing uncomfortable throat sensations (physical discomfort, pain, and fatigue) among teachers, comparing telepractice and in-person delivery methods.

Methods

Twenty female classroom teachers from public elementary schools (mean age = 41.3 ± 5.77 years) were randomly assigned to two groups: one received the intervention via telepractice, and the other through in-person delivery. The intervention consisted of vocal hygiene education and structured vocal warm-up exercises. Outcome measures included acoustic voice analysis, auditory-perceptual evaluation, and three validated self-report instruments targeting physical vocal discomfort, voice-related pain, and vocal fatigue. Data were analyzed using the Wilcoxon signed-rank test for within-group comparisons and the Mann–Whitney U test for between-group differences.

Results

Both in-person and telepractice interventions led to measurable improvements in vocal function. In auditory-perceptual assessments, the in-person group showed significant reductions in severity scores for sustained vowels (MD = -8.5 , $P = 0.011$) and connected speech (MD = -7.22 , $P = 0.041$), while the telepractice group exhibited comparable but non-significant changes. Acoustic analyses revealed significant improvements in shimmer and HNR for both groups, with the in-person group showing greater gains in HNR for vowel /a/ ($+6.04$ dB, $P = 0.005$) and jitter reduction for vowel /i/ (-0.158% , $P = 0.047$). Self-reported vocal tract discomfort and pain scores decreased significantly post-treatment, with the telepractice group demonstrating a greater reduction in discomfort frequency (MD = -8.5 , $P = 0.005$). Voice Fatigue Index scores improved across all subscales in both groups, with total scores decreasing from 29.5 to 19.6 ($P = 0.005$) in the in-person group and from 28.2 to 21.3 ($P = 0.009$) in the telepractice group. No significant between-group differences were observed, indicating comparable efficacy of both delivery modalities.

Conclusion

This study demonstrated that both telepractice and in-person delivery of vocal hygiene education and structured warm-up exercises are effective in enhancing vocal function among teachers. Significant improvements were observed across auditory-perceptual, acoustic, and self-reported outcomes, with no statistically significant differences between the two modalities. These results support the clinical viability of telepractice as an accessible and equally effective alternative to traditional in-person voice therapy, particularly for teachers as a large population of professional voice users.

Section snippets

INTRODUCTION

In recent decades, the integration of digital technologies into healthcare delivery has transformed the landscape of clinical practice, particularly in the fields of rehabilitation and behavioral health. Among these innovations, telepractice as a subset of telemedicine has emerged as a viable and increasingly popular method for delivering speech-language pathology services remotely.¹ Defined as the application of telecommunications technology to provide clinical services at a distance,

Study design

This study employed a randomized controlled trial (RCT) design to compare the effectiveness of vocal warm-up and vocal hygiene interventions delivered via telepractice versus in-person therapy. The trial was prospectively registered in the Iranian Registry of Clinical Trials (IRCT) under the identifier IRCT20241228064192N1.

Participants

Twenty female classroom teachers from public elementary schools (mean age = 41.3 ± 5.77 years) were recruited through announcements and invitations distributed in local

Sustained vowel (/a/)

Participants in the In-Person group demonstrated a statistically significant reduction in overall severity scores following the intervention (Mean Difference = -8.5 , $P = 0.011$), indicating perceptible improvement in vocal quality. In contrast, although the Telepractice group exhibited a comparable mean reduction (-8.0), the change did not reach statistical significance ($P = 0.088$). Between-group comparisons revealed no significant differences in CAPE-V scores either pre-intervention ($P = 0.701$)

DISCUSSION

Telepractice has emerged as a viable alternative to in-person therapy for delivering speech-language pathology services, particularly in contexts where access to care is limited by geographic, physical, or occupational constraints.^{1, 2, 3} Among professional voice users, teachers are especially vulnerable to voice disorders due to the vocal demands of their profession and environmental stressors such as classroom noise and poor acoustics.^{34, 35, 36} Despite the growing use of telepractice in

LIMITATIONS

Despite the strengths of this randomized controlled trial, several limitations should be acknowledged. First, the sample consisted exclusively of female teachers, which limits the generalizability of the findings to male populations. Second, although the sample size was sufficient to detect moderate effects, it may have lacked the statistical power to identify subtle differences between the two delivery modalities. Third, the relatively short duration of the intervention and follow-up period

FUTURE DIRECTIONS

Future studies should aim to include more diverse samples to better understand potential gender-related differences in vocal response to intervention. In this study, Google Meet was chosen for treatment sessions due to its accessibility, ease of use, and widespread availability for teachers, many of whom were already familiar with the platform. Future studies should employ platforms with stronger security features (e.g., Zoom for Healthcare or other password-protected services) to ensure

CONCLUSION

This randomized controlled trial demonstrated that both telepractice and in-person modalities of vocal hygiene education and structured warm-up exercises yield significant improvements in vocal function among teachers. Improvements were observed across auditory-perceptual, acoustic, and self-reported measures. While most outcome variables showed no statistically significant differences between the two delivery methods, some measurements did reveal modest variations favoring one modality over

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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