



Vocal Strengthening Groups at the Glenrose Improve Self Perception of Intelligibility

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Objective

This study examined the effect of a vocal strengthening group that includes singing on people with voice problems. A “self assessment of intelligibility” (how well one is understood by others) was chosen to measure communication with others in everyday life.

Introduction

A weakened voice due to aging, de-conditioning (illness or surgery), stroke and Parkinson’s disease is a problem commonly found in rehabilitation hospitals. Symptoms may include a quiet voice, lack of inflection, poor voice quality, reduced intelligibility and decreased abdominal breath support¹. Such vocal changes may be indicative of de-conditioned muscles of the larynx and breathing mechanism. Voice problems can have a serious effect on socialization² and work life functioning³.

A program emphasizing vocal reconditioning or “physio for the voice” has been introduced to the outpatient programs at the Glenrose Rehabilitation Hospital. The program is based on a PhD project⁴ and emphasizes vocal effort during both the exercises and during choral singing (not just a “sing-a-long”). Treatment included vocal exercises drawn from speech-language pathology, vocal pedagogy and choral singing.



Photo by Reuben Mahaffy

Methods

This single group pretest-posttest study included one half hour of vocal exercises and one half hour of choral singing with piano accompaniment.

Nineteen participants attended two 60 minute group sessions per week for one month. Participants were selected based on ability to attend both the initial and final assessments. Sixteen outpatients and three inpatients took part. Diagnoses included Parkinson’s disease (13), stroke (4), vocal changes due to aging (1) and dementia (1). Ages ranged from 54 to 91 years with a mean age of 72.

The *Speech Intelligibility Inventory: Self Assessment Form*⁵ was completed by all participants before and after the treatment period.

Because variability between and within subjects was assumed to be high (variety of diagnoses and fragile, rapidly changing populations), and because patients were not all seen in the same time period (2011 to 2014) and data was taken as a part of normal, busy clinical evaluation, a pre-posttest design was used to minimize both variability and time required to gather data.

Data Analysis

The changes in scores between pretest and posttest were analyzed with a paired samples t-test using the SPSS software.

| Variable pre-post change | p value 2-tailed paired | Cohen’s effect size |
|---|-------------------------|---------------------|
| Speech Intelligibility Inventory: Self Assessment Questionnaire (SII) | .02 | .42 |

Findings

Most participants rated their ability to be understood by others as improved following the vocal strengthening program.

Discussion

The perceived improvement in intelligibility (understandability) may be due to actual vocal changes or to increased confidence in their vocal effectiveness.

Clinical & Research Implications

This study demonstrates that a twice per week outpatient vocal strengthening group accommodating people with voice problems due to aging, de-conditioning and neurological insult and disease helped them feel that they were better understood by others (self perceived intelligibility).

A larger study with greater power may show greater effects. Future research should include a larger sample and a control group, and could also explore voice and airway protection changes.

References

¹Darley, F. L., Aronson, A. E., & Brown, J. R. (1969a) Clusters of Deviant Speech Dimensions in the Dysarthrias. *Journal of Speech & Hearing Research*, 12, 462-469.
²Oxtoby, M. (1982) *Parkinson’s Disease Patients and Their Social Needs*. London: Parkinson’s Disease Society.
³Vilkman, E. (2000) Voice Problems at Work: a challenge for occupational safety and health arrangement. *Folia Phoniatrica et Logopaedica (IAPL)*, 52,(1-3), 120-125.
⁴Tanner, Merrill. (2012) *Vocalization Therapy for People with Parkinson’s Disease*. PhD Dissertation in Rehabilitation Science, University of Alberta (<http://hdl.handle.net/10402/era.25321>).

References continued

⁵Kent, R. (1994) *Speech Intelligibility Inventory: Self Assessment Form*. In R. Kent, Ed. *Reference Manual for Communication Sciences and Disorders: Speech & Language*. Austin, TX: Pro-Ed, 81.

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