Perceptual Disconnect in PD affects Vocal QOL and Intelligibility Results

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Introduction: A common perceptual problem associated with Parkinson's disease (PD) is difficulty matching appropriate effort level with audible speech loudness. In other words, perception of their own loudness by persons with PD is not accurate and as a result they produce a quiet voice instead of an audible voice. As the disease progresses, the effort needed to produce speech increases and the voice becomes progressively quieter. Treatment involves coaching people with PD to increase effort level, helping them re-condition their vocal mechanism (larynx, pharynx, lungs) and teaching them to use greater effort (especially abdominal breath support) than they think they should. We incorporated this approach in a voice program that used choral singing and voice exercises from speech-language pathology and vocal pedagogy¹.

Objective: To examine the effect of a group voice and singing therapy program on the vocal quality of life, and speech intelligibility of people with PD using two self-assessment tools.

Methods: A single group pretest-posttest study design was used. Twenty-eight (28) participants attended two 90-minute group sessions per week for six weeks. The two questionnaires, the Speech Intelligibility Inventory: Self Assessment Form² and the Voice Related Quality of Life³ (V-RQOL), were completed by each participant before and after the intervention. Because variability between and within subjects is high in PD, a pre-posttest design was used to control for this expected variation.

Findings (Table 1):

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>p value (2-tailed-paired)</th>
<th>Cohen's effect size</th>
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</thead>
<tbody>
<tr>
<td>Voice-Related Quality of Life</td>
<td>.008</td>
<td>.58</td>
</tr>
<tr>
<td>Speech Intelligibility Inventory</td>
<td>.000</td>
<td>.93</td>
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Discussion: Results from both questionnaires were significant. However, the effect size, or size of difference, for the Speech Intelligibility Inventory (SII) was much greater. What made the SII more sensitive? The two questionnaires were compared. The SII was designed for dysarthria and the V-RQOL was designed for voice disorders. Voice is one component of Parkinsonian dysarthria. The SII has more questions (21) than the V-RQOL (10), suggesting that the longer length may be a factor. Although self-rated, the questions on the SII ask the respondent how others perceive his or her speech, whereas the V-RQOL questions focus on only the person’s perception of his or her voice/speech. The focus on feedback from others about how understandable one’s speech is may be important given the perceptual problems in PD. “Patients with PD appear to have a perceptual disconnect between their actual loudness level and their own internal perception of loudness.”⁴ This perceptual disconnect may contribute to why the assessment of the self-perception of their own speech/voice was a less robust indicator of change than an examination of the feedback they recall from others listening to their speech/voice.

Clinical & Research Implications: This study demonstrated that a community-based social activity accommodating various stages of PD and different musical skill levels in a group setting may improve vocal QOL and self-assessed intelligibility. The results may also have implications for self evaluation in PD. Feedback from others about speech/voice, albeit perceived by respondents with PD, appears to be a better indicator of improvement than just self-perception of speech/voice. The SII may be uniquely suited for measuring changes in people with PD due to its longer length, focus on dysarthria and emphasis on questions about feedback from others. A vocal QOL that incorporates more feedback from others and less self perception may be a more effective tool.

References

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