

Voice use in daily life: Comparisons between patients with Parkinson's disease and matched controls.

Audio recordings of patients with voice and speech disorders are often made in a controlled environment such as a sound treated recording studio to ensure a standardized and reliable recording. However, there is reason to believe that voice use in such controlled environment may not be fully representative of a speaker's actual voice use in everyday life. Other factors, such as background noise and stress, may also affect the voice as well as different communication situations such as speaking in groups or on the telephone.

The portable voice accumulator VoxLog allows for long-term monitoring of voice use in ambulatory settings during the speakers' regular activities outside a clinical setting. Four aspects of vocal function can be monitored including voice sound level (dB SPL), fundamental frequency (Hz), phonation time (time spent phonating during the registration period), and level of environmental noise (dB SPL). Such information is important as a basis for planning and evaluation of therapeutic and preventive intervention and to further increase our understanding of how voice disorders affect voice use.

In Parkinson's disease, speech and voice symptoms are common in addition to the general motor symptoms and voice and speech symptoms can be the first symptoms of disease onset. Perceptual symptoms include reduced vocal loudness, breathiness, hoarseness, imprecise articulation, monotone pitch, and variations in speech rate. Individuals with Parkinson's disease often report that their social interactions are limited due to their voice and speech symptoms.

The study aims to answer the following questions:

- What are the differences in voice use in individuals with Parkinson's disease and healthy controls, matched regarding age, gender, and occupation, when studied with the VoxLog in daily life?
- Is the voice use during studio recordings representative of voice use outside the clinic for individuals with Parkinson's disease and matched healthy controls respectively?
- How well do the participant's subjective ratings of voice use correlate with objective information gathered with the VoxLog?

VoxLog was worn by 30 participants during eight full days for long-term monitoring of voice use during everyday life activities. Studio recordings of habitual speech were performed three separate times to allow comparisons of voice use in a controlled versus uncontrolled environments. The participants logged their activities in a voice journal during the monitoring periods and rated their voice use three times per day regarding subjectively perceived vocal loudness, phonation time and level of environmental noise. Results from the subjective ratings and the objective data from the VoxLog registrations were analyzed to examine how well they correlated and if there were any differences between individuals with Parkinson's disease and controls.

Preliminary results showed lower voice sound level and phonation time for individuals with Parkinson's disease compared to healthy controls. Great variability was seen when comparing voice use during studio recordings to field recordings with a general higher voice sound level during field recordings for both groups. No, or generally weak, correlations were found when subjective ratings of voice use were compared to objective data from Voxlog for both groups.