

## **Effects of menopause on voice: voice metrics and patient-reported outcome measures**

Filipa M.B. Lã

Faculty of Education, Department of Didactics, School Organization and Special Didactics,  
National University of Distance Learning (UNED), Madrid, Spain | filipa.la@edu.uned.es

The results of previous patient-reported outcome measures (PROMs) have suggested a prevalence of voice disturbances in association with menopause; about 46% of singers complain about voice disturbances and 35% of vocal discomfort. In addition, direct observations of the vocal folds have found cases of menopause-related oedema, dehydration, atrophy and reduced lubrication. However, the extent to which these symptoms may be reflected on changes in voice metrics is still to be understood.

A systematic review and meta-analysis of cross-sectional studies comparing voice metrics between pre- and post-menopausal groups was undertaken. A total of 18 studies were comparable. Due to the great variability of data collection and analysis in these primary studies, from the 28 different voice metrics investigated, only 5 could be considered for a meta-analysis: fundamental frequency, extracted from running speech (SFF) and from a sustained vowel /a/ ( $f_0$ ), jitter, shimmer, noise-to-harmonic ratio (NHR) and maximum phonation time (MPT). SFF and  $f_0$  were 0.94 and 1.18 semitones (ST) lower for the post-menopausal group as compared to the pre-menopausal, respectively. This reduction is likely to be imperceptible as it falls below the 2 ST just noticeable interval difference for both sinus tones and voices, produced within the range of 160 to 200 Hz. One could argue that such result represents a negligible effect of menopause on voice-related ability to work, even for those who professionally depend on voice quality. To address this question, a new PROMs evaluating the biopsychosocial impact of the voice at menopause (EVA) was designed. Preliminary reports will be presented.