

## **COHERENCE OF BRAIN ELECTRICAL ACTIVITY: A QUALITY OF LIFE INDICATOR IN ALZHEIMER'S DISEASE?**

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**Introduction** – Better knowledge about quality of life (QOL)-related factors in patients with Alzheimer's disease (AD) can produce elements that improve the diagnosis and neurophysiological basis. This study aimed to assess clinical, electroencephalographic (EEG), and QOL aspects of AD patients.

**Method** – The study assessed 28 patients with a mean age of  $76.7 \pm 5.4$  years seen at PUC-Campinas' Neurology Outpatient Clinic diagnosed with mild or moderate AD (Group AD) and 29 subjects with a mean age of  $72.7 \pm 6.9$  years without a history of cognitive decline, or neurological or psychiatric disorder (Control Group, CG). The procedures included: CERAD battery, executive function tests, Hamilton Depression and Anxiety Rating Scales, Functional Activities Questionnaire (FAQ), QOL scale for patients with AD, and quantitative EEG absolute power and coherence at rest. The study investigated relationships between QOL and clinical-EEG aspects. The significance level was set at  $p < 0.05$ .

**Results** – Group AD had worse QOL than the CG ( $30.5 \pm 5.4$  x  $38.8 \pm 6.8$ , respectively). Group AD had higher absolute theta global power ( $39.6 \pm 9.2$  x  $33.7 \pm 8.8$ , respectively) and lower theta, alpha, and beta global inter-hemispheric coherences ( $0.49$  x  $0.53$ ;  $0.47$  x  $0.53$ ; and  $0.41$  x  $0.45$ , respectively). For group AD, theta global inter-hemispheric coherence and theta fronto-occipital coherences correlated significantly with QOL (partial correlations controlled for mini-mental state examination and FAQ;  $0.43$  and  $0.45$ , respectively,  $p < 0.05$ ). The EEG and QOL of the CG were not significantly correlated.

**Conclusions** – Analysis of electrical brain activity coherence reveals correlations with QOL regardless of cognitive and functional variables and seems to be a neurophysiological QOL indicator in AD.