ORAL PRESANTATIONS

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MULTISCALE ENTROPY ANALYSIS OF ORAL MOVEMENTS IN PATIENTS DIAGNOSED WITH DEPRESSION: PRELIMINARY RESULTS

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BACKGROUND AND AIM: Depression is a common psychiatric disorder affecting emotional, cognitive, and motor functions, leading to changes in facial expressions and mouth movements. These oral movements reflect emotional states and cognitive processes. Recently, techniques like multiscale entropy (MSE) have become valuable tools for analyzing the complexity of biological systems. This study aims to assess the entropy of oral movements in depression patients using MSE, offering preliminary insights into the motor symptoms of depression.

METHODS: A total of 21 participants were included in both the depression and control groups. Oral movements were measured using MediaPipe (Google, n.d.) from images captured by POV glasses during natural interactions. Participants described their daily routine, allowing for the capture of spontaneous facial expressions and mouth movements. The complexity of these movements was quantified using MSE, a method for analyzing the irregularity of time series data at multiple scales. The study was approved by the Ethical Committee for Clinical Studies of Zonguldak Bülent Ecevit University, with approval number 2024/21.

RESULTS: There was no significant difference in age between the two groups (mean age for the depression group: 42.4, mean age for the control group: 41.2, $p = 0.751$), nor in gender distribution (depression group: 10 males, 11 females; control group: 9 males, 12 females, $p = 0.757$). However, the MSE analysis of oral movements revealed a statistically significant difference between the two groups ($p = 0.016$). The depression group had a mean rank of 16.95, while the control group had a mean rank of 26.05, indicating a greater complexity in the motor patterns of the control group compared to the depression group.

CONCLUSIONS: This preliminary study shows that there is a significant difference in the complexity of oral movements between the two groups, as assessed through MSE analysis. These findings provide valuable insight into the potential use of MSE as a tool for evaluating motor symptoms in depression, though further research with larger samples is needed to confirm these results and explore their clinical implications.

Keywords: Facial expressions, depression, multiscale entropy, oral movements