

PHENOTYPES OF PATIENTS WITH EXTENSIVE TOOTH WEAR- A NOVEL APPROACH USING CLUSTER ANALYSIS

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Aim: Explore a new approach to identify phenotypes of tooth wear (TW) patients using an unsupervised cluster analysis model, based on demographic, self-report, clinical, salivary and electromyographic findings.

Materials and Methods: Data was collected for 34 variables from 125 patients, aged 17—65 years, with a TW index > grade 2. Demographic information and presumed risk factors for chemical and mechanical TW were collected. A 14-item stress scale was completed and salivary flow rates, pH and buffer capacity were measured. Sleep bruxism was assessed with a portable single channel electromyographic device.

Results: The final cluster model comprised 16 variables and 103 patients and indicated two groups of TW patients; 61 participants in cluster A and 42 in cluster B. Cluster assignment was determined by several presumed mechanical risk factors and diseases affecting saliva. Cluster B had the highest percentage of sleep bruxism self-reports (A 1.6%, B 92.9%, $p \leq 0.001$), awake bruxism self-reports (A 45.9%, B 85.7%, $p \leq 0.001$), heavy sport exercises (A 1.6%, B 21.4%, $p = 0.001$); and highest percentage of diseases affecting saliva (A 13.1%, B 47.6%, $p \leq 0.001$).

Conclusion: TW patients can be clustered in at least two groups with different phenotypic characteristics but also with a large degree of overlap. Based on this type of algorithm, tools for clinical application may be developed and underpin TW classification and treatment planning in the future.