

1.4

Impact of oral health on masticatory efficiency and kinematics in young children

Natacha Linas (Centre de Recherche en Odontologie Clinique (CROC), UFR Odontologie, CLERMONT-FERRAND, France), Marie-Agnès Peyron (Institut National de la Recherche Agronomique (INRA), CLERMONT-FERRAND, France), Emmanuel Nicolas (Centre de Recherche en Odontologie Clinique (CROC), UFR Odontologie, CLERMONT-FERRAND, France), Valérie Collada (Centre de Recherche en Odontologie Clinique (CROC), UFR Odontologie, CLERMONT-FERRAND, France)

The preschool period is critical for the physiological maturation of the orofacial sphere. Oral health is considered as an influencing factor of the development of mastication, which is the first step of food consumption. However, while the impact of early dental decay on children's nutritional and weight and height states has often been evoked, few studies have assessed mastication in young children, regardless of their oral state. This work aimed at analyzing the masticatory behavior and efficiency in children with Severe Early Childhood Caries (S-ECC) compared to children with good oral health.

Thirteen children with S-ECC and 13 children from the control group were compared while masticating calibrated samples of raw carrot, cheese and breakfast cereals. The chewing evaluation criteria included refusals rates, kinematic parameters observed during a masticatory sequence (chewing time before swallowing (Ti), number of cycles (Nc) and frequency: Nc/Ti) and masticatory efficiency (D50 value: food bolus median particle size). Oral health-related study criteria were the number of Functional Dental Units, Oral Health-related Quality of Life scores (Early Childhood Oral Health Impact Scale: ECOHIS) and orofacial dysfunction scores (Nordic Oro-facial Test-Screening questionnaire: NOT-S). The chewing frequency was significantly lower in the S-ECC group compared to the control group, regardless of the food ($p \leq 0.001$). Masticatory efficiency was also significantly altered in children with S-ECC, who swallowed a food bolus containing a greater proportion of large particles (i.e. carrot D50 (μm): 4384 ± 929 for children with ECC vs. 2960 ± 627 for children from the control group, $p \leq 0.001$). Quality of life and orofacial functions were also altered by S-ECC.

In conclusion, this study has shown for the first time the negative impact of oral health on the masticatory behavior and efficiency in preschool children, suggesting that nutritional studies conducted during children development should take into consideration their oral state.