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BMI and behavioral factors on caries in Mexican urban/rural populations

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BACKGROUND: To investigate if, in Mexican adolescents, body weight and caries severity are associated, and if this associa- tion differs between rural and urban populations.
METHODS: Adolescents from the rural area of Tepancan and the city of Veracruz were enrolled. Caries was recorded using the International Caries Detection and Assessment System and the body mass index (BMI) was calculated. Oral habits (toothbrushing, flossing, dental check-ups) and dietary patterns (sweets intake) were assessed. A dummy variable between BMI and living area (BMI/Area) was generated. Data were analysed using STATA and a multinomial logistic regression model was run, using caries severity as the dependent vari- able.
RESULTS: Four-hundred and sixty-four subjects, 12–15 years of age, participated (rural = 240; urban = 224). The BMI and area of residence were significantly associated ($chi^2 = 12.59$, $P < 0.01$). Area was also associated with caries severity ($chi^2 = 24.23$, $P < 0.01$), with the highest number of caries in dentine recorded in participants from the rural area. The dummy variable BMI/Area was related to caries severity ($chi^2 = 27.47$, $P < 0.01$): overweight adolescents with caries in dentine were most frequently found in the rural area. A higher prevalence of caries in enamel and a lower prevalence of caries in dentine ($P < 0.01$) were recorded in adolescents from the urban area, where better oral habits, but higher sweets intake ($P = 0.04$), were encountered. According to the multinomial logistic regression model, BMI/Area was sig- nificantly associated with caries severity ($P < 0.01$).
CONCLUSIONS: Overweight was not associated with caries severity in the overall population, but it became a statistically significant risk indicator in adolescents living in the rural area.

Oral health inequalities in Italian schoolchildren: a cross-sectional evaluation

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BACKGROUND: To evaluate which of the following indicators of socio-economic status (SES) has the strongest association with dental caries status in a 6-years-old population: the educational level of each parent (individual-level); the mean price of housing/m2 in the area where the family resides; or the mean per capita income in the area where the family lives (area-level).
METHODS: Dental caries was recorded in 2,040 schoolchildren (42.5% boys, 57.5% girls) using decayed/missed/ lled surface index (d3 level) in primary dentition. Parents lled in a standardised questionnaire regarding nationality, level of education, frequency of dental check-up and perception of child's oral health and child's oral hygiene habits.
RESULTS: At the individual-level of SES, mothers' educational level was associated with their children's caries severity ($\chi 2 = 147.51$ $p<0.01$): as educational level rose the proportion of children with high numbers of carious lesions fell. The two income indicators (area-level SES) were not associated. A multinomial logistic regression model was run for caries risk factors. Caries severity was used as dependent variable and the model was strati ed by mothers' educational level. Mothers' percep- tion of child's oral health was the only covariate that was always associated in every caries severity strata and for each level of mothers' education.
CONCLUSIONS: The present study shows that mothers' educational level is a useful individual SES indicator for caries in Italian children living in a low-income population.

Surface analysis on primary teeth after using of two toothpastes with different fluoride concentration: an *in vivo* study

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BACKGROUND: The aim of the study was to observe *in vivo* the surface effect of two different toothpastes, available on the market, with different fluorine concentration. The analysis was conducted *in vivo* on deciduous teeth.
METHODS: A selection of 20 deciduous molars, from 20 patients, was prepared. The selected teeth showed no alteration of the enamel. The teeth were extracted as a result of orthodontic treatments or physiological replacements. The procedures were performed at the UOC of Pediatric dentistry Sapienza University of Rome department of Oral and Maxillo-Facial Science. The selected patients was successively divided in two groups of ten patients each one respectively. The daily oral hygiene procedures was carried out with 500 ppm of fluorine, for the first Group and 1400 ppm of fluorine for the second Group. After 15 days the aforementioned primary teeth were extracted and preserved in normal saline. Successively the primary teeth were sectioned at a cementum-enamel junction and were viewed with VP-SEM electronic microscope to analyze the characteristics of the enamel surface.
RESULTS: Micrographic analysis of the samples treated with toothpaste at 500 ppm of fluorine shows non-uniform layers, with a high surface roughness and the presence of irregularly scattered amorphous precipitates. Patient samples that instead used toothpaste with a fluoride concentration of 1400 ppm, show a less irregular surface with a present, but more attenuated, roughness. A finer granulation than the previous ones is visible in an uneven manner, which confers a non-uniform but in any case more structured stratification.

CONCLUSIONS: In the pediatric field the prevention of caries lesions is one of the main targets. Early remineralization of initial enamel alterations may result in a delay in the progression of the carious process and an arrest of the same. The use of toothpaste with a high content of fluorine showed a better remineralizing effect, resulting in a more uniform surface compared to teeth after toothpaste treatment with 500 ppm fluorine. These do not improve the superficial morphology of the teeth, maintaining a relevant roughness that exposes the enamel more to the bacterial insult and the onset of carious lesions.

Comparative evaluation of the surface effect of two toothpastes with different fluorine concentration on primary teeth surface

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BACKGROUND: The purpose of this study is to analyze the effect of two toothpaste, with different fluorine concentrations, on the enamel surface of deciduous teeth. The study was performed *in vitro* by means of SEM microscopy.
METHODS: A selection of 20 deciduous molars was prepared. The teeth were extracted as a result of orthodontic treatments or physiological replacements. The procedures were performed at the UOC of Pediatric dentistry Sapienza University of Rome department of Oral and Maxillo-Facial Science. Each element, with no sign of cracks on the enamel, was preserved in normal saline and then sectioned at a cementum-enamel junction level. Successively the external and occlusal surfaces have been etched with 37% orthophosphoric acid for 1 minute in order to reproduce the demineralization that occurs in the oral environment. Each fragment of the same tooth was treated with two different toothpastes (with 500ppm and 1400ppm fluorine concentration respectively) for 15 days and manually brushed three times a day using pediatric toothbrushes for 2 min. Each section was rinsed and preserved in normal saline, renewed every brushing session. Finally a roughness analysis was carried out.
RESULTS: In the samples treated with 500 ppm both surfaces present a cribrosus layer, uneven, with a worn out appearance and visible crater-like spaces. In the samples treated with toothpaste at 1400 ppm of fluorine, an improvement of the surface morphology of the enamel has been highlighted, which however maintains a superficial roughness not completely attenuated, due to a non-homogeneous distribution of the same material. The roughness analysis values highlight these differences between the two materials.
CONCLUSIONS: The use of toothpaste with a high concentration of fluorine, compared to those with low concentration, shows a greater remineralizing power on surfaces of artificially demineralized deciduous teeth, ensuring a character of caries prevention. Toothpastes with 500 ppm, despite reducing the potential risk of systemic accumulation of fluorine (due to accidental ingestion of the material during daily oral hygiene), do not demonstrate significant effectiveness in the repair and protection of the enamel surface by acidic substances attack. These findings therefore translates into an increased risk of the onset of caries.

Lesch-Nyhan syndrome: evaluation of a modified bite device to prevent bite injuries

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Lesch-Nyhan syndrome (LNS) is a hereditary purine metabolism disorder, characterized by hypoxanthine-guanine phosphoribosyltransferase deficiency with uric acid overproduction, neurological and behavioral disorders.The prevalence reported in the literature is 1/380,000 to 235,000 births. Males are affected and females are heterozygous carriers. LNS begin to appear at 3-6 months of age with muscle hypotonia and difficulties in maintaining the sitting position and supporting the head. Other signs include psychomotor and mental retardation of varying degrees of severity and obsessive-compulsive self-injurious behavior, usually marked by stress, with bites and injuries to lips, tongue, cheeks and fingers. A 4-year-old patient with LNS showed up at the Department of Pediatric Dentistry of "Sapienza" University of Rome. The first signs of the disease occurred at approximately 3 months of age, but only genetic test confirmed the definitive diagnosis. From three months of age the patient showed typical bite injuries to hands and lips. Initially, patient' parents controlled hand injuries with application to arms of guardians which prevented bending of the elbow. As a solution to intraoral injuries, parents used an extraoral elastic as attempt to prevent biting. This solution was a source of discomfort for the child and caused decubitus of the lips. In agreement with other studies in the literature, the following therapy has been proposed by our department: two 2mm thick silicone soft bites applied to two arches. In the following days compliance and results were monitored: the upper bite had a positive effect, with good compliance, but the patient could easily remove the lower bite for inadequate retention given reduced dental support. Because literature does not provide specific guidelines, an individual bite device with innovative features was built. New silicone putty dental casts were taken and a study model was realized and digitized. This virtual working model could then be reproduced in the lab with the great advantage of not having to take further casts from the patient, without discomfort and stress. The main goal was improving comfort and compliance of new device with a better retention and stability. The inner part, in contact with teeth, was realized in 2mm thick soft silicone. The external part has been realized with hard transparent resin, extended to the fornix, with two shields which removed muscular pressure of lower lip and cheeks. A front handle in soft resin was inserted to help the parents inserting the device in child's oral cavity and improve the device' overall stability. A review of previous case reports from literature showed usual failure of standard mouth guards and successive resort to tooth extractions. In this case report, the patient underwent regular follow up visits that highlighted device positive effect. Compliance was excellent, the child wore device regularly without discomfort, no intraoral bite injuries were found, and parents reported a normal night's rest, which also improved the quality of life by reducing stress and pain due to injuries. Bites were also worn during soft food feeding, increasing adherence with a standard denture adhesive. The current 10 months follow up confirms the results obtained in the first few days of use. This case report show a correct management to prevent bite injuries due to LNS. For future studies, it is important to improve the multidisciplinary