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## **Wpływ nawyków żywieniowych na stan zdrowia jamy ustnej 18-letniej młodzieży licealnej**

### **SUMMARY**

Nowadays, oral cavity diseases are one of the most common medical conditions. They concern both the teeth and tissues supporting the teeth, and are a therapeutic problem from early childhood to old age.

Due to the multifactorial etiology of these diseases, it is difficult to distinguish the population particularly exposed to them, and, simultaneously, initiate targeted prophylaxis. Widely described in the literature, the influence of oral hygiene on health is reflected in the promotion of appropriate toothpaste, toothbrushes, and other accessories facilitating dental hygiene.

One of important etiological factors associated with oral cavity diseases are eating habits. A balanced and sensible diet should constitute an essential element of the prophylactic programme aiming to improve children's and adolescents' health. The assessment of the masticatory system in children and adolescents shows significant health problems of the oral cavity and proves the need for taking appropriate preventive steps already in early childhood.

The aim of the study was to assess the interdependence between tooth decay and periodontal diseases and eating habits in a population of 18-year-old high school students. Moreover, the relationship between oral diseases and social conditions was studied. The study was to verify eating habits which contribute to prophylaxis against and the treatment of oral cavity diseases. The concentration of selected proinflammatory cytokines (IL-6, IL-8 and TNF- $\alpha$ ) in unstimulated saliva was measured and an attempt was made to define them as markers for the presence of tooth decay.

The study group was composed of 18-year-old high school students from Białystok. The study consisted of three parts. In the first part, 368 participants completed questionnaires regarding eating habits and social conditions.

The second part consisted in the clinical dental examination, to which 284 participants agreed. The condition of teeth and periodontium was assessed using the Pl.I., GI, and DMF index.

At the last stage, the concentration of IL-6, IL-8 and TNF- $\alpha$  cytokines in unstimulated saliva was studied. The cytokine concentration was examined in a group of 35 participants. To examine the relationship between oral health and IL-6, IL-8 and TNF- $\alpha$  cytokine saliva concentration, participants were divided into two groups: the control group consisting of 9 subjects without signs of active tooth decay ( $D=0$ ) and the study group consisting of 26 subjects with active decay ( $D>0$ ).

The results showed high frequency of tooth decay in the entire group which was studied in terms of the participants' place of residence and eating habits. Among the eating habits, snacking between main meals and eating sweets frequently played an important role in decay. The arithmetic mean of the number of teeth with active decay ( $D$ ) among participants who admitted to snacking between meals (1.9) was almost four times higher compared to the subjects who do not snack between main meals (0.5). The highest values of DMF index (average of 12.4) were noted in the group of participants eating sweets every day, while the average DMF index value in participants eating sweets at most several times a month amounted to 10.1.

The studies conducted proved a significant influence of nutrition on the occurrence of periodontal diseases. Eating fruits between meals reduced plaque formation (median of PI.I. in the group of participants who snack between meals was 0.3, and for non-snacking subjects, it amounted to 0.5). On the other hand, eating sandwiches, sweets and foods with a high saturated fat content contributed to plaque formation.

Some eating habits also proved to have influence on the clinical condition of gums among the persons examined. A positive influence was shown by: snacking fruits (GI median of 0.1 and 0.3 for snacking and non-snacking subjects, respectively), snacking vegetables (GI median of 0.0 and 0.2 for snacking and non-snacking subjects, respectively), consuming milk (GI median of 0.0 and 0.2 for participants consuming milk often and rarely, respectively), eating apples (GI median of 0.1 and 0.3 for subjects eating apples often and rarely, respectively), and consuming carrots (GI median of 0.1 and 0.3 for participants eating carrots often and rarely, respectively). A negative influence on the condition of gums was showed by: snacking crisps between meals (GI median of 0.2 and 0.0 for snacking and non-snacking subjects, respectively) and eating in fast food restaurants (GI median of 0.5 and 0.1 for subjects eating and not eating fast food, respectively).

Saliva test results showed that average saliva concentrations of such proinflammatory cytokines as IL-6, IL-8 and TNF- $\alpha$  were statistically higher in the group of patients with active tooth decay in relation to those without active decay.

In the light of the results obtained, the following conclusions were formulated. In the study group, tooth decay was present in 100% of participants, with relatively good clinical condition of gums and low plaque index. A significant impact on the health of the teeth and gums of study participants was demonstrated by eating habits (snacking in particular) and eating facilities (fast food restaurants). A diet rich in fruits, vegetables, and dairy products had a positive influence on the oral health. A negative influence was observed in the case of excessive consumption of saturated fats, sweets, and highly processed products. The saliva concentration of selected proinflammatory cytokines (IL-6, IL-8 and TNF- $\alpha$ ) in the participants with active tooth decay was significantly higher when compared to the group free from active decay.

Due to high frequency of tooth decay among children and adolescents, the need to distinguish a group of persons particularly exposed to dental caries becomes essential. As an easily available diagnostic material, saliva may be used for early diagnosis of pathological conditions in the oral cavity already in very small children, while the saliva concentration of proinflammatory cytokines may be used as dental caries lesions marker.