

**Ministry of Higher Education
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College of Dentistry**



Salivary Inflammatory Biomarkers in Relation to Oral Health Status among Obese Boys Aged 12 Years

A thesis
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Abstract

Background:

Worldwide, obesity trends are causing serious public health concerns and significantly increases the risk of morbidity and mortality. It has an effect on the person`s general health including the oral health.

Aims of the study:

This study was designed to investigate the oral health status among a group of obese boys in relation to salivary inflammatory biomarkers (interleukin-6 and C-reactive protein) and selected salivary elements.

Materials and methods:

The study group consists of forty obese boy of an age 12 year, and forty normal weighted boy of the same age as a control group. Assessment of nutritional status was done by using Body Mass Index specific for age and gender. Dental caries severity was recorded by using the index of Muhlemann (1976). Plaque index of Silness and Loe (1964) was used for plaque assessment, calculus component of periodontal disease index of Ramfjord (1959) was used for calculus assessment and gingival condition assessed according to gingival index of Loe and Silness (1963).

Unstimulated salivary samples were collected under standardized condition, salivary flow rate was determined and then the salivary samples chemically analyzed to determine the concentration of salivary interleukine-6, C-reactive protein, calcium, magnesium and phosphorus.

Results:

Caries experience of permanent dentition (DMFS) among study group was lower than that among control group with significant difference ($P<0.05$) for D_2 , while caries experience of primary dentition (dmfs) was significantly ($P<0.05$) lower among study group compared with control group with significant difference ($P<0.05$) for ds and highly significant difference ($P<0.01$) for d_4 .

Salivary flow rate was lower among study group compared with control group with no significant difference. No significant correlations ($P>0.05$) were recorded between salivary flow rate and dental caries, oral cleanliness and gingival health conditions among both groups.

The mean value of plaque, calculus and gingival indices were not significantly lower among study group compared with control group. A positive highly significant correlations ($P<0.01$) were recorded between gingival and plaque indices among both groups.

The level of salivary interleukin-6 (pg/ml) was higher among study group compared with control group with no significant difference between them; whereas there was no significant difference between the two groups regarding C-reactive protein ($\mu\text{g/ml}$) level. Salivary calcium and magnesium levels (mg/dl) were highly significantly ($P<0.01$) lower among study group compared with control group, whereas salivary phosphorus level (mg/dl) was not significantly higher among study group compared with control group.

Salivary interleukin-6 and C-reactive protein were negatively correlated with dental caries of both dentitions among study group with significant correlation ($P<0.05$) between IL-6 and D_2 , while they were correlated positively with dental caries of both dentitions among control group with highly significant correlation ($P<0.01$) between IL-6 and D_3 and significant correlation ($P<0.05$) between IL-6 and d_4 . Salivary calcium was correlated positively highly significantly ($P<0.01$) with DMFS and significantly ($P<0.05$) with D_4 among control group. Salivary magnesium was correlated positively significantly ($P<0.05$) with DMFS and D_2 among study group; also it was correlated negatively highly significantly ($P<0.01$) with d_3 among control group. Salivary phosphorus was correlated significantly ($P<0.05$) in positive direction with d_3 among study group; also it was correlated highly significantly ($P<0.01$) in negative direction with DMFS and significantly ($P<0.05$) in positive direction with d_3 among control group.

Conclusions:

The result of the current research revealed that the oral health status was better among obese boys compared with normal weight boys. Salivary inflammatory biomarkers were slightly higher among obese boys and they were inversely correlated with dental caries. Salivary inflammatory biomarkers may play an important role in development of resistance to caries. Obesity and dental caries have common risk determinants and require a comprehensive multiple approach by both medical and dental health care professionals.