

**Dental caries among a group of boys with
β-thalassemia major (10-12 years old) in
relation to selected salivary ions and mutans
streptococci**

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Abstract

Background: Beta thalassemia major is an inherited disorder. It leads to the decreased production and increased destruction of red blood cells. Several biochemical and microbial alterations of saliva in those patients can occur affecting dental caries occurrence and severity.

Aims of the study: The aim of the present study was to assess the severity of dental caries, oral health cleanliness, mutans streptococci and some salivary constituents in addition to flow rate and pH, among a group of boys with beta thalassemia major in comparison with control group.

Materials and Methods: The study involved 30 boys with BTM aged 10-12 years compared to 30 healthy boys with the same age group. d_{1-4} mfs and D_{1-4} MFS indices were applied (Muhlemann, 1976), while the oral health cleanliness was recorded by application of plaque index of Sillness and Löe, (1964), stimulated salivary samples were collected for the estimation of calcium, potassium, phosphorous and iron ions using Atomic Absorption Spectrophotometry and biochemical analyses, in addition to the measurement of pH and flow rate. The viable counts of mutans streptococci in saliva were also determined.

Results: The entire thalassemic group was caries-active. In primary teeth, a higher dmfs values were recorded for study group (dmfs=6.43±6.185) compared to control group (dmfs=5.03±5.468), difference was statistically not significant. DMFS was found to be higher in study compared to control groups (DMFS=6.5±4.297) for study group and (DMFS=4.23±2.029) for control group, the difference was statistically significant (P<0.05). Plaque index was higher in study group (PI=1.434±0.283) compared to control group (PI=1.245±0.258) and the difference was statistically highly significant (P<0.01). Both pH and salivary flow rate were higher in study compared to control groups and differences were

statistically not significant. All the salivary inorganic constituents were found to be lower in the study compared to control groups, all the differences were statistically not significant except, for that of calcium ion ($P < 0.05$). Salivary bacterial counts of Mutans streptococci were found to be higher in study group compared to control group and the difference was statistically highly significant ($P < 0.01$). All the correlations between salivary parameters and dental carries in study group were found to be statistically not significant. Correlations between salivary inorganic compositions and dental caries in study group were found to be statistically not significant concerning calcium and phosphate. Potassium ions correlations with D_4 and DMFS in study group were statistically highly significant and significant respectively ($r = 0.492$, $P = 0.006$) and ($r = 0.387$, $P = 0.035$). Iron was correlated with DMFS in study group and the correlation was statistically significant ($r = -0.415$, $P = 0.023$), also iron correlated with d_4 and dmfs in the study group and both the correlations were statistically significant ($r = 0.432$, $P = 0.017$) and ($r = 0.379$, $P = 0.039$) respectively. All correlations between bacterial counts and dmfs/DMFS in study group were statistically not significant. Results of multiple linear regressions between dmfs and all of entered factors (salivary inorganic constituents, salivary parameters and mutans streptococci) revealed a strong complete correlation coefficient of 0.514 in study group and 0.559 in control group, the R^2 value was 26.4% in study group compared to 31.2% in control group. Regarding DMFS, a strong complete correlation coefficient of 0.612 in study group and 0.664 in control group were recorded, the R^2 value was 37.5% in study group compared to 44% in control group.

Conclusion: Dental caries was found to be higher in beta thalassemic major patients than normal children; therefore they are in need of effective preventive measures.