

***Oral Health Status, Salivary Physical  
Properties and Salivary Mutans Streptococci  
Among A Group of Mouth Breathing Patients  
in Comparison to Nose Breathing  
(Comparative Study)***

***A thesis  
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## *Abstract*

**Background:** Mouth breathing can lead to introduce cold, dry unprepared air that insults the tissue of oral cavity, nasopharynx and lung, leading in turn to pathological changes in oronasal cavity, nasopharyngeal and other respiratory tissue, mouth breathing associated with nasal obstruction may lead to many health problems, in particular oral health problems such as inflammation of gingiva, oral dryness, change in oral environment that may decrease pH, salivary flow rate and increase bacteria and dental caries.

**Aims of the study:** Aims of the present study were to assess the oral health condition among mouth breather associated with nasal obstruction, including dental caries, oral cleanliness and gingival health condition as well as to evaluate the changes in salivary physical characteristics and salivary mutans streptococci counts, and their relation to oral variables in comparison to a control group.

**Materials and Methods:** Thirty patients with mouth breathing associated with nasal obstruction (15 females and 15 males) were selected as a study group with an age range (18-22) years old, all subjects were examined by ENT specialist to confirm mouth breathing. A 30 gender and age matched healthy looking subjects without nasal obstruction were selected as control. The diagnosis and recording of dental caries was according to severity of dental caries lesion through the application of D<sub>1-4</sub>MFS (Manji et al., 1989). Plaque index of (Silness and Loe, 1964) was used for plaque assessment; gingival index of (Loe and Silness, 1963) was used for gingival health condition assessment. Stimulated salivary samples were collected according to (Tenovuo and Lagerlof, 1996) and the following variables were recorded: microbiological analysis included the salivary counts of mutans streptococci, salivary flow rate, salivary pH (potential of hydrogen) and then measurement of salivary viscosity by using Ostwald's viscometer.

**Results:** Results of the present study showed that the mouth breathing group had statistically highly significant, higher plaque and gingival indices than nose breathing group ( $P<0.01$ ) with a positive highly significant correlation between them in mouth breathing and nose breathing groups ( $r=0.56$ ,  $r= 0.64$ , respectively).

The salivary flow rate was lower among mouth breathing with highly significant difference than nose breathing ( $P<0.01$ ), also salivary pH was lower among mouth breathing but with significant difference compare to nose breathing ( $P<0.05$ ); statistically a negative highly significant correlation was recorded among mouth breathing group between salivary flow rate with gingival index ( $r= -0.56$ ).

It has been found that salivary viscosity was not statistically significant difference between mouth breathing group and nose breathing group. The salivary viscosity was found to be inversely significantly correlated with salivary flow rate among mouth breathing group ( $r= -0.38$ ). While it was positively not significantly correlated with plaque index, gingival index and counts of mutans streptococci among mouth breathing group.

Data analysis of the present study showed that salivary mutans streptococci counts among mouth breathing group were higher than that among nose breathing group, difference was statistically highly significant ( $P<0.01$ ). A negative correlation between salivary mutans streptococci counts with salivary pH among mouth breathing group, while a positive not significant correlation was found between salivary mutans streptococci count with dental caries experience among mouth breathing group.

**Conclusion:** Mouth breathing associated with nasal obstruction may have an effect on oral health status, leading to an increase in periodontal disease and changes in dental caries.