Oral Health Status Among Groups of Pregnant And Lactating Women in Relation to Salivary Constituents and Physical Properties

(A Comparative Study)

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Zinah Mohammed Taqi Issa

B. D. S.

Supervised by

Prof. Dr.Sulafa K El-Samarrai

Preventive Dentistry

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Abstract

The physiological and hormonal changes during lactating and pregnancy may affect dental and gingival health conditions. Aims of this study were to investigate the occurrence and severity of both dental caries and periodontal diseases among these women in relation to different salivary variables and constituents. The sample taken in this study was 90 women divided into three groups; each one is composed of 30 volunteers; the first study group representing lactating mothers whose their infants were 4-6 months old, the second group was pregnant women in the third trimester of pregnancy. Each of them were 20-21 years old primiparous mothers. The control group comprised 30 married non-pregnant nulliparous women; age matched with the study group. Dental caries was recorded by the application of DMFS index following the criteria described by WHO (1987), while the oral cleanliness and the periodontal health status were recorded by applications of plaque index (PlI), gingival index (GI), calculus index (CI), periodontal pocket depth (PPD) and clinical attachment level (CAL).

Stimulated salivary samples were collected and the following variables were recorded; flow rate, pH and buffer capacity. Salivary samples were chemically analyzed for the detection of electrolytes (Ca and PO_4), and immunoglobulin (IgA), in addition to lysozyme enzyme. Samples of breast milk were taken from lactating mothers and analyzed for the estimation of Ca, PO_4 ions, IgA, and lysozyme enzyme.

Results showed a high caries-experience among pregnant group (4.23±5.94) compared to lactating group (3.23±6.19) and the control group (2.20±3.71) with no statistically significant difference P>0.05.

Regarding dental plaque index, the lactating group showed the highest value (1.230± 0.28) while the pregnant group exhibited the lower value

(1.135± 0.29) with statistically no significant differences between the three groups (P> 0.05). Gingival index showed the highest value among the pregnant group (1.340± 0.31), while the lowest one was among the control group (1.252± 0.31), with no statistically significant differences between the three groups. Calculus index was also higher among pregnant women (0.020± 0.06) and lowest in the control (0.003± 0.01), with no statistically significant difference, all of the examined women were with probing pocket depth scores of zero. A positive significant correlation was existed between plaque index and gingival index in the control and lactating groups r=0.445, P=0.014 and 0.456, P=0.011 respectively.

Buffer capacity in stimulated salivary samples revealed a highest value among the control group (6.835± 3.073) and the lowest in the pregnant group (4.315± 0.452) with statistically highly significant differences P<0.01 between three groups. While the pH revealed the highest value in the control group (7.420 ± 0.304), the pregnant group exhibited the lowest (7.000 ± 0.358) with statistically highly significant difference between the three groups P<0.01. While no significant differences were noticed regarding salivary flow rate between women examined (P>0.05). No significant correlations were recorded between all variables, with various directions of the correlations except for the salivary flow rate; a negative significant correlation with DMFS in group of lactating women was noticed (r=-0.384, p=0.036).

Salivary calcium ions measured by mg/dl showed a high concentration in saliva of the lactating group (7.078±3.484) followed by the control group (1.652±0.202) and lowest in pregnant group (1.132±0.085), with statistically significant differences between all examined groups (P<0.01). While phosphorous ions showed the highest concentration in saliva of the lactating group (6.043±3.321) compared to the other two

groups, with no statistically significant differences. Salivary phosphorus ions showed a negative correlation with DMFS in the control group (r= -0.370, P=0.044).

Regarding salivary lysozyme the highest value (measured by ng/dl) was recorded among the pregnant group (29.86±23.43), compared to the lactating group (27.30±18.09) and the control (26.54±16.155) with statistically no significant difference. Salivary lysozyme showed a significant positive correlation with gingival index (r=0.400, P=0.02) in the lactating group and a significant positive correlation (r=0.473, P=0.008) with plaque index in the pregnant group. As for the salivary IgA the highest value was recorded among the pregnant group (36.22±22.721mg/dl), followed by the lactating group (25.75±7.935 mg/dl) while the lowest value was recorded in the control (25.29±1.002 mg/dl) with a statistically highly significant difference. Salivary IgA showed a positive significant correlation with gingival index in the pregnant group (r=0.394, P=0.03).

Regarding milk constituents (IgA, lysozyme, calcium ion and phosphorous ion) in group of lactating, all concentrations were higher in milk than in saliva except for the lysozyme, which was higher in saliva, with no significant correlation between salivary and milk constituents.

Multiple linear regressions revealed that all salivary and serum factors had impact on DMFS by 10.1% and 44% on DS, while the impact on GI was 25.3%.

Results revealed that the changes in salivary variables and composition may have an impact on the dental and gingival health status of both the pregnant and lactating groups. Thus, it is recommended that these two groups to receive a special program to control and prevent dental caries as well as periodontal diseases.