

Odontometric Measurements and Salivary Cortisol Among Low Birth Weight 5 Years Old Kindergarten Children in Relation to Dental Caries (Comparative Study)

A Thesis

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Abstract

Background:

Birth weight is a powerful predictor of infant growth and survival. Evidence now shows that children born with low birth weight face an increased risk of chronic diseases and have many health problems including oral health.

Aims of the study:

The present study was designed to assess the salivary flow rate, viscosity, and salivary cortisol among low birth weight kindergarten children aged 5 years old in Hilla centre, in relation to dental caries; in addition to estimate the changes in tooth size and arch dimension measurements among them and compare them with the normal birth weight children of the same age and gender.

Materials and methods:

The total sample involved for saliva and dental caries assessment was composed of 80 children (40 low birth weight and 40 normal birth weight) aged 5 years. The diagnosis and recording of severity of dental caries was recorded through the application of $d_{1-4}mfs$ index according to the criteria described by Mühlemann (1976). The stimulated saliva was collected from the total sample under standardized conditions and then analyzed for measuring salivary flow rate and viscosity, in addition to estimation of salivary cortisol by special cortisol kit using VIDAS[®] Cortisol S.

The sub- sample of 60 children (30 low birth weight and 30 normal birth weight) were included for the odontometric measurement. For both upper and lower study models, photographs were taken using special photographic apparatus for each child, and the data were then analyzed using special computer software. For the primary dentition, two liner measurements were utilized, representing (mesiodistal and bucco/lingual or palatal) tooth diameters for each tooth. Ten linear measurements were utilized for each dental arch including width, length and segmental

measurements.

Results:

Data analysis of the present study revealed that the mean rank of dmfs, ds, ms and fs were found to be higher among low birth weight than normal birth weight groups respectively, with a statistically significant difference for dmfs, ds, highly significant difference for ms and non significant difference for fs. However, significant difference was found for ds grade d_1 and that decay fraction (ds) had contributed the major part of dmfs.

Salivary analysis demonstrated that the mean rank of salivary flow rate was found to be lower among the low birth weight than the normal birth weight groups with non significant difference. The viscosity of saliva was found to be highly significantly higher among low birth weight than normal birth weight groups. Concerning salivary cortisol, data analysis found that the mean rank was higher among low birth weight than normal birth weight groups. However, the difference was not significant.

Results of the current study showed that all means of mesiodistal and buccolingual diameters values of maxillary and mandibular teeth were lower among low birth weight than normal birth weight groups except for buccolingual diameters of maxillary and mandibular right and left canines. These findings were found to be with statistically significant difference except for mesiodistal diameters of maxillary right canine, lateral incisor and left lateral incisor and mandibular right canine, in addition to buccolingual diameters of maxillary right and left canines and central incisors, mandibular right canine, lateral and central incisors, left canine and lateral incisor. Concerning dental arch dimensions, all mean values of maxillary and mandibular arch width, length and segments were found to be lower among low birth weight than normal birth weight groups with statistically significant difference except for mandibular anterior arch length and maxillary right and left incisor-molar

distances and left incisor-canine distance.

Conclusion:

The results of the current research revealed that low birth weight status affect oral health conditions as the caries experience, saliva viscosity and salivary cortisol were found to be higher among the low birth weight children in addition to minimize the odontometric measurements including tooth diameters and dental arch dimensions.