

**Republic of Iraq  
Ministry of Higher Education  
and Scientific Research  
University of Baghdad  
College of Dentistry**



**The Relationship between Salivary Cortisol level and  
Mutans Streptococci Bacteria in Children with Early  
Childhood Caries (comparative study)**

A Thesis

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## **Abstract**

**Background:** Early childhood caries is a critical widespread health problem among preschool children in both developing and industrialized countries with several etiological and associated risk factors. *Mutans Streptococci* are the main cariogenic microorganisms associated with this type of disease. Hypothalamic-pituitary-adrenal axis release salivary cortisol hormone, which encourage the proliferation of *Mutans Streptococci*.

**Aims of study:** the aims of this study were to estimate the difference in the level of salivary cortisol, viable count of *Mutans streptococci* and anxiety among early childhood caries group and caries free group and to evaluate the impact of salivary cortisol, *Mutans streptococci* and anxiety on the development of early childhood caries.

**Materials and Methods:** Eighty children aged 4-5 years old were selected randomly, then they were divided into two groups (forty for each), early childhood caries group, which were classified according to Wyne (1999) and caries free group. Dental caries was determined by measuring the dmfs according to WHO (1987), dental plaque was measured using Silness and Loe(1964) Plaque index. Unstimulated saliva collection was done according to Navazesh (1993). Laboratory investigations was carried out to measure the viable count of *Mutans Streptococci* by culturing on Mitis Salivarius Agar with the addition of bacitracin to the media (Mitis Salivarius Bacitracin Agar). Salivary cortisol level was measured using cortisol kit (electrochemiluminescence immunoassay). Child's anxiety was measured using Spence Children's Anxiety Scale (SCAS) (Spence et al., 2001). Statistical analysis was done using SPSS version 23.

**Results:** The statistical analysis of the present study showed that salivary cortisol ( $\mu\text{g}/\text{dl}$ ), viable count of *Mutans Streptococci* (CFU/ml) and anxiety were

significantly higher among the early childhood caries group than that found among the caries free group. Moreover, a significant positive association was found between salivary cortisol ( $\mu\text{g}/\text{dl}$ ) and the viable count of *Mutans Streptococci* (CFU/ml), and between the anxiety and the salivary cortisol level( $\mu\text{g}/\text{dl}$ ).

**Conclusion:** Salivary cortisol level, the viable count of *Mutans Streptococci* and anxiety was increased in children with early childhood caries. Anxiety had a positive impact on salivary cortisol which positively affected the viable count of *Mutans streptococci* . So, it may play a role on the development of early childhood caries.