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College of Dentistry**



**Maximum Bite Force in Relation to Oral and  
Nutritional Status Among 8 and 9 years Old  
Primary School Students (Cross Sectional Study)**

A Thesis

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## **Abstract**

**Background:** This study was conducted to assess the maximum bite force in selected 8 and 9 years old Iraqi primary school children in Al-Khalis district / Diyala Governorate /Iraq, to examine the existence relation to the oral and nutritional status among those children.

**Materials and methods:** Maximum bite force was measured in 400 primary school children (205 boys 195 girls), aged 8 and 9 years old by the use of a bite force sensor. Diagnosis and recording of dental caries was done according to the criteria described by world health organization (1987). Eruption of permanent teeth were measured according to **Ogodescu et al** formula (2011). Electronic digital caliper was used to measure the maximum mouth opening.

**Results:** According to caries experience of primary teeth in this study revealed that in both of the age groups, the decay component was higher among boys than in girls, however the difference between genders was significant only for the decayed anterior teeth among the 8 years old group. Nevertheless, there were no significant differences between genders within the age group of 8 years regarding their caries experiences of permanent teeth. On the other hand, among boys children ,in the age group of 9 years, the mean of the decayed teeth at (right side ,left side , anterior area) was significantly higher than that found in girls children in the same age group ( $p=0.006,0.001$  and  $0.01$  respectively). A significant difference was found between genders concerning caries experiences of permanent teeth among children of 9 years old.

Concerning permanent teeth eruption, the results demonstrated that girls had higher mean of erupted permanent teeth in the anterior region in both of the age groups with a highly significant difference than that found among boys, however,

the significant difference between genders for the total count of the erupted permanent teeth was found only among the younger age group.

The erupted permanent teeth according to the eruption scores showed a significant difference between boys and girls at both of the age groups for both arches.

Maximum bite force was higher among boys than that found among girls at all sides and regions except for the left side among the younger girls. There was a statistical significant difference between the maximum bite force and nutritional status, erupted permanent teeth and nutritional status at all the groups where the lowest values were found among the thinness group, while the obese group had the highest values.

The findings of the present study revealed that there was a significant weak positive correlation between maximum mouth opening at the left side among the boys of the younger age and the girls of the older age group.

**Conclusion:** Maximum bite force increased with increasing age and it was higher among boys than that found among girls with a significant difference among the older age group. Age, gender and nutritional status were found to be predictors that can affect the value of the maximum bite force. There was a significant but weak positive correlation between maximum mouth opening and maximum bite force at left side. Erupted permanent teeth were higher among girls than that found among boys at both of the age groups.