

## ABSTRACT

**Introduction:** Breastfeeding as promoted by Holy Qur'an as a key strategy in improving infant's life also has been consistently shown to provide multiple health benefits for both mothers and their infants. Aim of the study was to evaluate the effect and association of feeding pattern on infants' growth, facial growth, genetic variations. In addition to the effect of mothers' conditions (oral health and bonding status) on infant's variables.

**Materials and Methods:** The study is cross-sectional comparative concerning salivary biochemical and genetic analyses as well as assessments of infants' growth parameters, mothers oral-health and bonding status. In addition to the longitudinal prospective concerning for timing of eruption. Sample composed of 200 mothers and their infants were assigned according to pattern of feeding in to: 100 breastfed infants compared with 100 artificial fed infants. Mothers age ranged between 20-35 years and their infants age ranged between four to nine months they were selected from health centers of Baghdad. For evaluation of bonding status, Arabic version of postpartum bonding questionnaire by Brockington et al in 2006 was utilized. The community periodontal index and decayed, missing and filled surfaces (DMFS) index according to world health organization in 2013 guideline were used for measuring mothers' oral health status. Moreover, infants' growth pattern and facial growth were measured in accordance to Control Disease Center in 2000 and Hall et al. in 1989 respectively. Infants' first primary tooth emergence also was determined. Additionally, infants' salivary biochemical and genetic analyses were done for subsample 40 infants from each group matched together in age and gender selected randomly from the whole sample, as transforming growth factor- $\beta$ 1 were measured using enzyme-linked immunosorbent assay. Also, genomic DNA extraction for detection both polymorphisms in HMGA2 gene rs17101923 and BMP4 gene rs17563

from oral mucosa cell was carried out by real time polymerase chain reaction. Data were statistically analyzed using SPSS 22 Chicago Illinois USA. The level of p value as significant  $P \leq 0.05$ .

**Results:** The data of present study showed that the mean values of eruption time among breastfeeding group was significantly lower than bottle-feeding group. According to the genetic analysis, the significant differences were occurred in gene HMGA2 rs17101923 of both heterozygous AG, and homozygous GG genotypes frequencies by feeding pattern. Homozygous AA and heterozygous AG genotypes have significant differences with weight for age indicator among breastfeeding group. Also, heterozygous AG genotype has a significant difference with eruption time by feeding pattern. The growth indices and facial growth were significantly higher among bottle feeding in comparison to breastfeeding infants. Transforming growth factor-b1 was significantly higher among breastfeeding group. Although, no significant difference was found between mothers' caries status and feeding pattern; Significant differences were found between mothers' caries status and both genetics and growth of infants by feeding pattern. Moreover, there was a significant difference between disorder bonding mothers and infants' growth. There were also significant differences among later eruption infants in accordance to disorder mothers particularly in bottle-feeding group and by feeding pattern.

**Conclusion:** Within the confines of this research, breastfeeding has a positive influence on infants' growth and early eruption time. However, bottle feeding may have a negative impact on both growth and eruption; this is may be related to both genetic or epigenetic effects of infants' milk. Additionally, infants' growth was impacted by their mothers' caries experience throughout their feeding pattern. Furthermore, mothers bonding also has an influence on both infants' growth and teeth emergence.