

## **Age estimation of first deciduous tooth and sequence of eruption for the primary dentition in relation to the nursing habits among the kerbala children**

Hawraa Khalid Aziz  
Assistant Lecturer  
College of Health and Medical Technology

### **Abstract:**

The deciduous tooth emergence considered as very important to assess growth and development of the children and also very important indicator for the age estimation in children. In this study age of the first tooth erupt was estimated and the effect of the feeding types which are either breast or bottle feeding and sex on the number of the deciduous teeth present in the children has been studied. 252 children from the age 6 months - 34 months who's selected randomly and number of teeth eruption was studied in correlation with age, position in the dental arch, sex, type of nursing habits. The results showed the mean numbers of the teeth was higher in group of the breast feeding than those with bottle feeding and in the females higher than males. The mean time of the lower central incisor was earlier than upper central incisor with no difference in the halves. In conclusion of this study the breast feeding has the better effect on the teeth eruption and development. There is acceleration in dentition in the female than males. Lower central incisor is the first tooth erupts in both sides in the dental arch.

### **الخلاصة:**

يعتبر ظهور الأسنان اللبنية مهم جداً لتقييم تطور النمو لدى الأطفال وكذلك يعتبر مؤشر مهم جداً لتقدير العمر لدى الأطفال. في هذه الدراسة تم تقدير عمر ظهور السن الأول وكذلك تأثير نوع الرضاعة سواء كانت رضاعة طبيعية او رضاعة صناعية ونوع الجنس على عدد الأسنان اللبنية الموجودة عند الأطفال. 252 طفل من العمر 6 شهور الى 34 شهر تم اختيارهم عشوائياً حيث تم دراسة عدد الأسنان الظاهرة حسب عمر، وضع الأسنان في الفك، جنس، ونوع الرضاعة. أظهرت النتائج ان متوسط عدد الأسنان كانت أعلى في مجموعة الرضاعة الطبيعية من مجموعة الرضاعة الصناعية وفي الإناث أعلى من الذكور. وان متوسط العمر للقواطع المركزية السفلية كان يسبق القواطع المركزية العلوية بغض النظر عن موقعها في الفك سواء يمين او يسار. تبين من نتائج هذه الدراسة ان إطعام الاطفال طبيعياً له التأثير الأفضل على نمو وتطور الاسنان اللبنية وهناك تعجيل في التسنين لدى الإناث من الذكور. ان السن الأول الذي يظهر في فك الأسنان هو القاطع المركزي السفلي.

## **Introduction**

The attention was given to the primary dentitions and the interest in the pediatric dentistry has increased , so the needs and demands of this field have evoked various ideas for researchers to add more information required to understand growth and development of the primary dentition where play an important role ( 1 ).

Deciduous teeth, otherwise known as primary teeth, are the first set of teeth in the growth development of humans. They develop during the embryonic stage of development and erupt that is, they become visible in the mouth during infancy. They are usually lost and replaced by permanent teeth, but in the absence of permanent replacements, so they can remain functional for many years. In the deciduous dentition there are a total of twenty teeth: five per quadrant and ten per arch. The eruption of these teeth begins at the age of six months and continues until thirty-three months of age. The deciduous dentition is made up of central incisors, lateral incisors, canines, first molars, and secondary molars; there is one in each quadrant. Usually, the first teeth seen in the mouth are the centrals and the last are the maxillary second molars ( 2 ).

The primary teeth gradually erupt through the gums during the first 2<sup>1/2</sup> years of life. So most children have a full set of primary teeth by the time they are 3 years old making room for the permanent (adult) teeth that will begin to erupt at about age 6 years. So the first set of teeth holds a place in the jaw for the permanent teeth, which move into place as the primary teeth are shed. Primary teeth should be kept clean and healthy so that a child can remain free of cavities and oral pain because the infection from decayed primary teeth can damage the permanent teeth developing under them. As well as primary teeth may be temporary, but they deserve good care. A child needs strong, healthy primary teeth not only to chew food easily, but to pronounce words properly ( 3 ).

Therefore, deciduous teeth are considered essential in the development of the oral cavity by dental researchers and dentists. The permanent teeth replacements develop from the same tooth bud as the deciduous teeth; this provides a guide for permanent teeth eruption. Also the muscles of the jaw and the formation of the jaw bones depend on the primary teeth in order to maintain the proper space for permanent teeth. The roots of deciduous teeth provide an opening for the permanent teeth to erupt. These teeth are also needed for proper development of a child's speech and chewing of food ( 4 ).

On the other hand, Eruption of deciduous teeth is affected by climate, race, diet, nutrition, and disease. Consequently, deciduous tooth emergence has been used to assess growth and development and for age estimation in children ( 5 ).

Milk, in its various forms, is well known to be beneficial for the development of teeth and bone. More importantly, milk is the major nutritional source in the first years of life. However, different health care workers such as dentists, dietitians and nursing professionals have been known to give recommendations to the public, for breast feeding and weaning ( 6, 7 ).

Therefore the nursing habits including the breast feeding and the bottle feeding of children and serves as promoters of oral hygiene practices, and the health and economic benefits of breast feeding in both developing and developed countries have been extensively documented ( 8 ). As well as it is interesting to note that the World Health Organization (WHO) recommends to maintain breast feeding up to the second year of life or even longer ( 9 ).

Because the milk is essential nutrients for development healthy tooth include calcium, phosphorus, and vitamins A, C, and D. Calcium and phosphorus are needed to properly form the hydroxyapatite crystals, and their levels in the blood are maintained by Vitamin D. Vitamin A is necessary for the

formation of keratin, as Vitamin C is for collagen. So the deficiencies of these nutrients can have a wide range of effects on tooth development (10).

The objectives of this study were to clarify the age estimation of the first deciduous tooth and to investigate the number of emerged primary teeth at various ages from age of 6 months to 34 months of age in kerbala children. It also investigated the effect of sex and type of feeding on the eruption timing of the first deciduous tooth and sequence of eruption primary teeth.

### **Materials and methods:**

In this study, the samples were composed of 252 subjects of children that were examined for eruption of teeth. Those subjects were selected randomly from the patients of health care centers in kerbala city with age range from 6 months - 34 months. Only, healthy children who do not show any diseased tooth or chronic illness in the form of endocrinal disorder, nutritional disorder and musculo-skeletal disorder, with good and moderate nutrition after doing their general physical examination along with height and weight were considered. Those subjects equally divided into two groups: breast feeding group had 126 children and bottle feeding group had other 126 children. Their teeth were examined for eruption and charting of teeth was done on Palmer's Notation chart. This system used numbers dividing the jaw into four quarters which has the same numbers for each quarter from the center to the periphery but differ in the position in the dental arch upper or lower and in the sides right and left (11). The children were examined visually using dental mirror and spatula under good light, and asked their mother about the sex and type of feeding for each child. For the age estimation of the first deciduous tooth equal numbers of 50 breast feeding children another 50 bottle feeding children randomly selected were examined their teeth present and its position in the dental arch upper of lower and right or left and asked their mother about the exact time of eruption of the first tooth. The statistical analyzed for data were prepared using descriptive statistic including mean and standard deviation for the effect of the age and sex on the eruption teeth , and the students t-test was used for comparisons between the breast feeding and bottle feeding groups.

### **Results:**

After doing the statistical analyses of the results it was found that the mean number of the deciduous teeth was higher in the children with breast feeding than those with bottle feeding in all age groups from 6 months to 34 months with statistically highly significance difference mean number of teeth in the groups of the children at age 6-9 months, 22-25months and 30-34months at ( $p < 0.01$ ). While there was a significance difference at age groups 10-13months, 14-17months, 18-21 months and 26-29 months at ( $p < 0.05$ ) as shown in Figure (1) and Table (1).

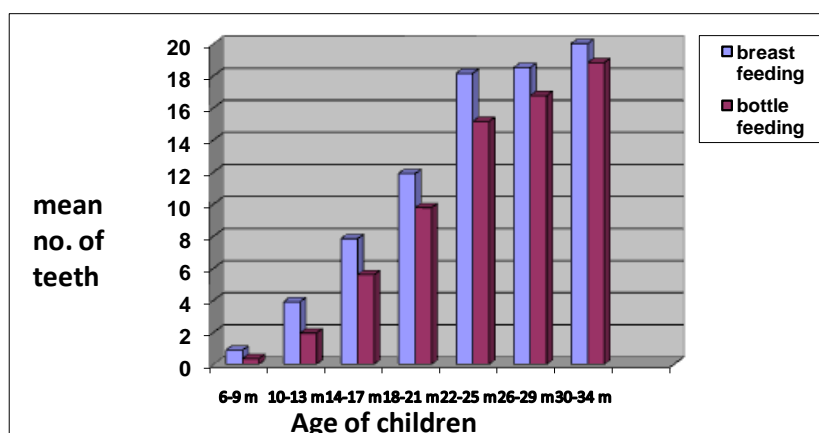


Figure (1): Mean number of the deciduous teeth in relation to the type of feeding of the children.

Table (1): mean number of the deciduous teeth in relation to the type of feeding among the children

Age(months)	Type of feeding	No.	Mean $\pm$ SD	t-value	P- value	Sig.
<b>6-9</b>	Breast feeding	17	0.88 $\pm$ 0.85	3.04	0.008	High sig. (p<0.01)
	Bottle feeding	17	0.35 $\pm$ 0.60			
<b>10-13</b>	Breast feeding	18	3.89 $\pm$ 2.56	2.412	0.027	sig. (p<0.05)
	Bottle feeding	18	1.94 $\pm$ 1.59			
<b>14-17</b>	Breast feeding	12	7.83 $\pm$ 2.48	2.283	0.043	sig. (p<0.05)
	Bottle feeding	12	5.58 $\pm$ 1.50			
<b>18-21</b>	Breast feeding	29	11.89 $\pm$ 3.48	2.307	0.029	sig. (p<0.05)
	Bottle feeding	29	9.76 $\pm$ 3.37			
<b>22-25</b>	Breast feeding	14	18.14 $\pm$ 2.28	4.837	0.000	High sig. (p<0.01)
	Bottle feeding	14	15.14 $\pm$ 1.02			
<b>26-29</b>	Breast feeding	16	18.50 $\pm$ 1.71	2.671	0.017	sig. (p<0.05)
	Bottle feeding	16	16.75 $\pm$ 1.00			
<b>30-34</b>	Breast feeding	20	20.00 $\pm$ 0.00	3.269	0.004	High sig. (p<0.01)
	Bottle feeding	20	18.80 $\pm$ 1.64			

Also the mean number of the deciduous teeth in the females was higher than males in all groups of the children from age 6 months to 34 months as shown in Figure (2) and Table (2).

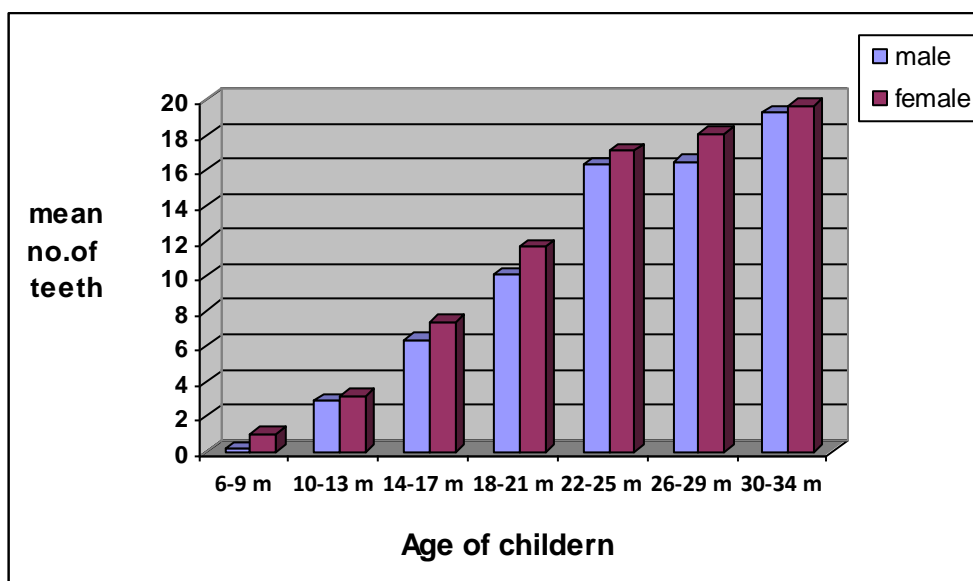


Figure (2): Mean number of the deciduous teeth in relation to the type of sex of children.

Table (2): mean number of the deciduous teeth in relation to the sex among the children.

Age(months)	sex	No.	Minimum value	Maximum value	Mean ± SD
<b>6-9</b>	Male	16	0.00	1.00	0.19 ± 0.40
	Female	18	0.00	2.00	1.00 ± 0.84
<b>10-13</b>	Male	24	0.00	5.00	2.87 ± 1.69
	Female	12	0.00	6.00	3.17 ± 1.52
<b>14-17</b>	Male	14	4.00	10.00	6.35 ± 2.02
	Female	10	5.00	14.00	7.40 ± 2.50
<b>18-21</b>	Male	42	1.00	16.00	10.09 ± 0.15
	Female	16	2.00	16.00	11.62 ± 4.12
<b>22-25</b>	Male	14	12.00	20.00	16.28 ± 2.33
	Female	14	14.00	20.00	17.14 ± 2.17
<b>26-29</b>	Male	8	16.00	18.00	16.50 ± 0.93
	Female	23	16.00	20.00	18.08 ± 1.65
<b>30-34</b>	Male	28	16.00	20.00	19.28 ± 1.46
	Female	12	18.00	20.00	19.67 ± 0.78

For the age estimation of the first deciduous teeth the results showed the central incisor is the first deciduous tooth erupted in the lower jaw and then the upper central incisor with no difference in the sides where right or left as shown in Table (3) that the mean age of eruption of the central incisor in the upper jaw was  $10.36 \pm 2.20$  months which was higher than the lower central incisor  $8.41 \pm 2.50$  months and the same mean age in both sides right and left.

Table (3): Mean age of eruption of first deciduous tooth (central incisors) in relation to the position and sides in the dental arch.

Type of teeth	No.	side	Minimum value	Maximum value	Mean ± SD
<b>Upper central incisor</b>	100	Right	4	14	10.36 ± 2.20
		left	4	14	10.36 ± 2.20
<b>lower central incisor</b>	100	Right	6	14	8.41 ± 2.50
		left	6	14	8.41 ± 2.50

For the mean age of the eruption of the deciduous central incisor in the relation to the type of nursing habits the results showed the mean age of the eruption of the upper central incisors was  $9.52 \pm 1.95$  months and  $11.16 \pm 2.14$  months for breast feeding and bottle feeding respectively, while for

the lower central incisors mean age was  $7.42 \pm 2.26$  months for those with breast feeding and  $9.78 \pm 2.28$  months for bottle feeding. The statistical comparison showed that there was higher significant differences between the mean age of the eruption of the central incisor of the breast feeding and bottle feeding groups at ( $p < 0.01$ ) as shown in Table(4).

Table (4): Mean age of eruption of first deciduous tooth (central incisors) in relation to the type of feeding.

Type of teeth	Type of feeding	No.	Mean $\pm$ SD	t-value	P- value	Sig.
<b>Upper central incisor</b>	Breast feeding	50	$9.52 \pm 1.95$	3.935	0.000	High sig. ( $p < 0.01$ )
	Bottle feeding	50	$11.16 \pm 2.14$			
<b>lower central incisor</b>	Breast feeding	50	$7.42 \pm 2.26$	5.323	0.000	High sig. ( $p < 0.01$ )
	Bottle feeding	50	$9.78 \pm 2.28$			

In Table (5) the comparison of mean age of the eruption of the central incisor according to the sex that showed the mean age of the eruption of the upper central incisor in male was  $11.22 \pm 2.09$  months while in female was  $9.24 \pm 1.70$  months. Also for the lower central incisor mean age were  $9.19 \pm 2.70$  and  $7.79 \pm 2.09$  in male and female respectively.

Table (5): Mean age of eruption of first deciduous tooth (central incisors) in relation to the sex.

Type of teeth	sex	No.	Minimum value	Maximum value	Mean $\pm$ SD
<b>Upper central incisor</b>	male	58	6.00	14.00	$11.22 \pm 2.09$
	female	42	6.00	13.00	$9.24 \pm 1.70$
<b>lower central incisor</b>	male	58	4.00	14.00	$9.19 \pm 2.70$
	female	42	4.00	14.00	$7.79 \pm 2.09$

The results of relation of the effect of the type of feeding and sex in the age of the eruption of the deciduous central incisor showed mean age of the eruption of the upper central incisor in male with breast feeding was  $10.19 \pm 1.87$  months while in the bottle feeding was  $12.06 \pm 1.89$  months and in female upper central incisor erupt at  $9.04 \pm 1.80$  while  $10.37 \pm 2.34$  months in breast feeding and bottle feeding respectively. The mean age of the lower central incisor erupt at  $7.73 \pm 2.42$  and  $9.50 \pm 1.58$  months in male with breast feeding and bottle feeding respectively, in the female the mean age was  $7.08 \pm 2.06$  and  $8.72 \pm 1.77$  for the breast feeding and bottle feeding respectively as shown in Table (6).

Table (6): Mean age of eruption of first deciduous tooth (central incisors) in relation to the sex and type of feeding.

Type of teeth	Type of feeding	sex	No.	Minimum value	Maximum value	Mean $\pm$ SD
<b>Upper central incisor</b>	Breast feeding	male	26	6.00	13.00	10.19 $\pm$ 1.87
	Bottle feeding	male	32	8.00	14.00	12.06 $\pm$ 1.89
	Breast feeding	female	24	6.00	13.00	9.04 $\pm$ 1.80
	Bottle feeding	female	18	8.00	13.00	10.37 $\pm$ 2.34
<b>lower central incisor</b>	Breast feeding	male	26	4.00	12.00	7.73 $\pm$ 2.42
	Bottle feeding	male	32	6.00	14.00	9.50 $\pm$ 1.58
	Breast feeding	female	24	4.00	12.00	7.08 $\pm$ 2.06
	Bottle feeding	female	18	6.00	14.00	8.72 $\pm$ 1.77

## **Discussion**

The results showed that the mean number of the deciduous teeth which higher in the children with breast feeding than those with bottle feeding this may be attributed to nutritional advantages of the breast feeding because the milk of the mother has minerals such as calcium and phosphorus and good vitamins especially vitamin A and D that was very important in the tooth development and formation as well as the children receive milk of a controlled composition to which benefits to dental health(12-14).

On the other hand, the result showed that the mean number of the deciduous teeth in the females was higher than males in all groups of the children from age 6 months to 34 months this result agreed with other result that was showed the mean number of the female slight higher than males at one year old ( 15 ) .

For the age estimation of the first deciduous teeth the results showed the central incisor is the first deciduous tooth erupted in the lower jaw then the upper central incisor with no difference in the sides where right or left, this result agreed with other result that showed the mean age of the lower central incisor was earlier than upper central incisor with no differences in the sides right or left halves in the same dental arch ( 16 ). On comparison the mean age of the lower central incisor and upper central incisor with other population it was found similar to that of other compared populations they were same with normal limit (17).

The mean age of the eruption of the deciduous central incisor in the children with breast feeding was earlier than those with bottle feeding this result agreed with other study that showed children who were not breast feeding at all showed delay emergence of the central incisors (5). And disagreed with other study that was showed no effect of breast feeding status on the time of eruption and pattern of teeth eruption in Nigerian children. (16 ).

The eruption of the central incisor according to the sex that was showed the mean age of the eruption of the upper central incisor in female higher than male this results agreed with other study that showed the eruption of the teeth were earlier in females (18). And disagreed with other study

that showed the slight acceleration in dentition in the male infants than female (15). Also disagreed with those who showed no differences in the eruption time of the both sex male and females (19).

In conclusion of the this study the breast feeding has positive effect on the mean number of the deciduous teeth in all age and the female dentition is earlier than male so with genetic difference makes it necessary to create specific standards of primary teeth emergence for the population. The lower central incisor is the first deciduous tooth erupts among the children with no difference in the both sides right or left.

## **References:**

1. Mohammad Abdul Star Al-segar. "The relation between deciduous teeth size and the dental arch dimension in Iraqi child". 10<sup>th</sup> Scientific conference for Foundation of Technical Education – Baghdad, pp: 199-206, 2007.
2. Ash, Major M. and Stanley J. Nelson Wheeler's. *Dental Anatomy, Physiology, and Occlusion*. 8th ed. , 2003.
3. Yasny J. S. "Preoperative Dental Considerations for the Anesthesiologist" . *Anesth. Analg.*, vol. 108(5), pp.: 1564 – 1573, 2009.
4. Brand, Richard W., Donald E, Isselhard . "Deciduous Dentition. *Anatomy of Oral facial Structures*". 7th ed. St. Louis, Missouri: Mosby, pp.: 194–224 , 2003.
5. Holman DJ, Yamaguchi K. " Longitudinal analysis of deciduous tooth emergence: IV. Covariate effects in Japanese children", *American Journal of Physical Anthropology*, Vol. 126, 3, pp.: 352 – 358, 2004.
6. King N.M., Hai Ming W." More Milk, Stronger Teeth? (Part I)". *Dental Asia* , pp.: 17-21, 2006.
7. Valaitis R, Hesch R, Passarelli C, Sheehan D, Sinton J. "A systematic review of the relationship between breastfeeding and early childhood caries". *Can J Public Health*.;91, pp.:411-417, 2000.
8. World Health Organization. "Collaborative Study Team on the Role of Breast feeding on the Prevention of Infant Mortality: How much does breastfeeding protect against infant and child mortality due to infections diseases: a pooled analysis of six studies from less developed countries". *Lancet*.;355 , pp.: 451-455, 2000.
9. World Health Organization. "Dentition status and criteria for diagnosis and coding (Caries). *WHO Oral Health Surveys - Basic Methods*". 4th ed. Geneva: WHO; pp.: 39-44. 1997.
10. The American Dental Hygiene Association. "Nutritional Factors in Tooth Development". Retrieved December 10, 2005.
11. Singh K, Gorea R.K., Bharti V." Age estimation from the eruption of the temporary teeth ", *JIAFM* , 26(3). pp.: 0971-0973, 2004.
12. Silver DH. A longitudinal study of infant feeding practice, diet and caries, related to social class in children aged 3 and 8--10 years. *British Dental Journal*, 163:296-300,1987.
13. LePeau, Nancy Sisty, RDH, MS, MA. "Pediatric Oral Health Care: Infancy through Age 5." *Clinical Practice of the Dental Hygienist*. By Esther M. Wilkins. Ed. John Goucher and Kevin C. Dietz. 9th ed. Baltimore, MD: Lippincott Williams & Wilkins, pp.: 782–802.
14. The American Dental Hygiene Association. "Table II. Effects of nutrient deficiencies on tooth development". Retrieved December 10, 2005.
15. Angella D. Fergusonab, Roland B. S., Harry Bakwin." Growth and development of negro infants: VIII. Comparison of the deciduous dentition in negro and white infants (A preliminary study)", *Journal of pediatrics* Volume 50 (3), pp: 327-331 , 1957.
16. Folayan M, Owotade F, Adejuyigbe E, Sen S, Lawal B, Ndukwe K." The timing of eruption of the primary dentition in Nigerian children." *Am J Phys Anthropol*.134(4):443-8, 2007.
17. Altamimi HK., Alzujaji RN." *The pocket clinical guide*". Collage of pharmacy, university of Basra, 1<sup>st</sup> ed., pp.: 21, 2007.
18. Kaul-SS; Pathak-RK; Santosh." Emergence of deciduous teeth in Punjabi children, north India." *Z-Morphol-Anthropol.* , 79(1): 25-34,1992
19. Saleemi-M; Jalil-F; Karlberg-J; Hagg-U. " Early child health in Lahore, Pakistan: XIII. Primary teeth emergence." *Acta-Paediatr-Suppl*. 82 Suppl 390: 159-67, 1993.