

Assessment of the relationship of developmental milestones and pattern of primary teeth eruption among Saudi children –a cross sectional study

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Abstract

Introduction: The time of eruption of deciduous teeth is an important concern for the parents, which shows a significant difference of timing in the population of Saudi Arabia. However, there are only few studies which assess the relationship between the eruption time of primary teeth with other developmental milestones of the children. Our study focus on the correlation between the time of eruption of deciduous maxillary and mandibular central incisors with the time at which the child starts to sit or walk.

Materials and Method: This study was conducted on 75 children in Riyadh and Qassim provinces of Saudi Arabia. Written consent was obtained from the parents regarding their willingness to participate in the study. A printed questionnaire was given to each parent and their responses regarding the time of eruption of upper and lower central incisors and the age at which the child starts sitting and walking were recorded during the interview and the correlation between them was assessed statistically.

Results: The study revealed that the correlation between the age at which child starts walking and the time of eruption of the mandibular central incisor was (0.443) and for the maxillary central incisors was (0.385). The relationship was less evident between the mandibular central incisors and walking, than in the maxillary central incisors, (0.058). On the other hand, there was no significant relationship between the eruption of the deciduous upper and lower central incisors with the age at which the child started to sit.

Conclusion: There was a positive correlation between delayed eruption of primary teeth and the time the child starts to walk. Parent's awareness of delayed eruption of primary teeth is an important matter that can help for an early pediatric or medical intervention.

Keywords: Developmental milestones, Primary teeth eruption Saudi children

Introduction

Oral health is integral to general health and should not be interpreted as separate entities. Oral diseases are progressive and cumulative and become more complex over time. They can affect our ability to perform our day-to-day activities. These diseases can also affect economic productivity. A healthy oral cavity is important in a growing child, as it helps to develop good speech, healthy eating habits, and good social skills.⁽¹⁾

The age at which the primary teeth erupt is of great significance in relation to growth and development of the child. Most parents are anxious about the timing of eruption, which is considered as an important milestone during a child's development. The parents often seek pediatricians' opinion regarding the timing of eruption of primary teeth.⁽²⁾

The formation of teeth, development of dentition and growth of craniofacial complex are closely related. Several studies have shown variation in the ages at which individual primary teeth erupt as well as variations of eruption pattern between different ethnic and racial groups.⁽³⁾ Other suggested factors, which affect the eruption time, may include gestational period, diseases, nutritional status and growth.

The relation of deciduous tooth emergence to a

child's growth and development has been little studied. The sparse literature on this subject usually states that deciduous tooth emergence is relatively independent of other growth processes. Most reports, however, are inadequately described methods and the previous studies lack adequate statistical analysis with contradictory and confusing results.⁽⁴⁾

The objective of the present study was to acquire the correlation between the time of the eruption of the maxillary and mandibular central incisors with the timing of other milestones like starting to sit and walk. Also, to check for any deviation in time of eruption in this population with the international standards of eruption schedule.

Materials and Method

This study utilized a cross-sectional design. The study population was Saudi children from Riyadh and Qassim provinces of Saudi Arabia. All the subjects were randomly selected, clinically healthy and aged between 6 to 36 months.

This study was conducted on 75 children (42 boys and 33 girls). Written consent was obtained from the parents regarding their willingness to participate in the study. A printed questionnaire was given to the parents and their responses regarding the time of the eruption of

upper and lower central incisors and the time when the child starts to walk and sit were collected based on the interview with the child's parents.

The study was done in Zulfi city mall, Zulfi, Alnakheel mall in Riyadh city and Al Othaim Mall in Buraidah city of Qassim province during the month of October and November 2016. The nationalities of the children were verified from the place of birth using the national identity cards of both parents.

The collected data were statistically analyzed by using the bivariate Pearson Correlation. Additionally, the mean and the median of the collected data were recorded.

Results

The statistical analysis revealed a significant correlation between the eruption of the maxillary and

mandibular central incisors with the time the child starts to walk. On the other hand, there was no significant relationship between the eruption of the deciduous upper and lower central incisors with the time when the child starts to sit. The study revealed that the correlation between the time of walking and the time of eruption of the mandibular central incisor was 0.443 and with the maxillary central incisors was 0.385. The relationship was more significant between the mandibular central incisors with the walking than in the maxillary central incisors, 0.058 (Table 1).

Additionally, the study revealed the mean values (Table 2) of the eruption times of maxillary central incisors to be 9.227 and for mandibular central incisors to be 7.253 which fall in the same range as given in the chronology table given by the American Dental Association (Fig. 1).

Table 1: Correlations between age at which child starts to sit / walk and eruption time of maxillary and mandibular central incisors

| | | Time of Eruption of Mandibular Central (Months) | Time of eruption of maxillary central (Months) |
|---|---------------------|---|--|
| Age at which child started to sit (Months) | Pearson Correlation | .226 | .188 |
| | Sig. (2-tailed) | .052 | .106 |
| | N | 75 | 75 |
| Age at which child started to walk (Months) | Pearson Correlation | .443** | .385** |
| | Sig. (2-tailed) | .000 | .001 |
| | N | 75 | 75 |

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2: Mode, mean and median of time of eruption of maxillary and mandibular central incisors

| | Time of Eruption of Mandibular Central incisors (Months) | Time of eruption of maxillary central incisors (Months) |
|--------|--|---|
| N | 75 | 75 |
| Mode | 7 | 9 |
| Mean | 7.253 | 9.227 |
| Median | 7.000 | 9.000 |

Primary Tooth Development

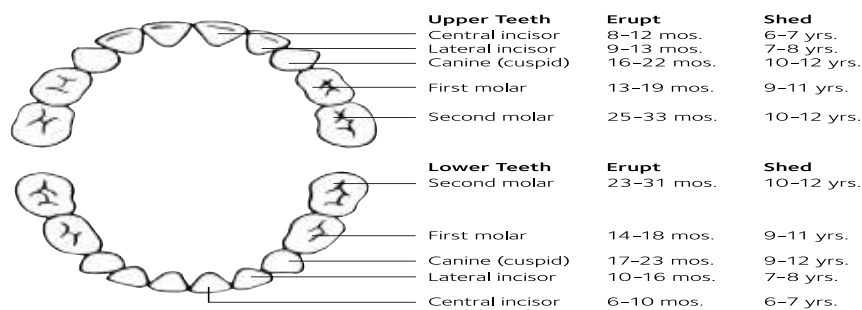


Fig. 1: Primary teeth eruption, American dental association

Discussion

The eruption sequence and growth of the jaws are key elements in the development of functional and aesthetic occlusions. Furthermore, dental formulas are used to estimate biological age and to track children's growth.⁽⁴⁻⁵⁾ Different studies provide information on the ages of eruption of individual teeth, along with their variations and most frequent order of tooth eruption,⁽⁶⁻⁷⁻⁸⁾ but a few of these studies showed a specific relationship between the eruption time of the deciduous teeth and the milestones of the child's growth. The present study, suggest a significant relationship between eruption time of deciduous central incisors and the age at which the child starts to walk, but there is no significant relationship between the eruption time of deciduous central incisors and the age at which the child starts to sit, which shows us different results compared to another study done in India. However, no conclusion could be drawn between developmental milestones and tooth eruption.⁽¹⁾ There were also significant associations between the total number of teeth present and height, weight and head circumference in boys; the associations in girls were significant for teeth vs. height. These findings indicate that the timing of deciduous tooth emergence is significantly related to general somatic growth and perhaps nutritional status.⁽⁴⁾ Majority of the differences and the relations of the eruption time of the deciduous teeth with the developmental milestones were attributed to geographic, climatic and environmental conditions, which makes it difficult to evaluate the role of these factors in the present study and therefore further research is needed.

As far as results related to the eruption time of primary teeth are concerned, they illustrated a delayed eruption of primary teeth of Saudi population compared with another populations.⁽²⁾ However, in this study, the results show an eruption time in the population of Saudi Arabia (Riyadh and Qassim provinces) in the maxillary central incisors, the median is 9 months and in mandibular central incisors is 7 months, which is in the range of the standard of the American dental association as in the maxillary central incisors erupts from 8 to 12 months and mandibular central incisors erupts from 6 to 10 months. Another study of emergence of primary teeth in children of Sunsari district of eastern Nepal, which suggested delayed eruption of incisors teeth compared with other groups.⁽⁴⁾ The findings of previous studies of delayed eruption of primary teeth were not significant as compared with the American dental association.⁽⁹⁻¹⁵⁾ The correlation between the eruptions of central deciduous teeth with the activity of the child (walking) is useful for identifying cases either with delayed eruption or with delayed activity (walking).

Conclusion

The main purpose of the present paper was to find a correlation between the eruption for primary dentition in children and the developmental milestones (sitting and walking). Our study showed a positive correlation between delayed eruption of primary teeth and the time the child starts to walk, but we would like to replicate this on large sample and formulate a standard eruption schedule of all teeth for the studied population. Parent's awareness of delayed eruption of primary teeth is an important matter that can help for an early pediatric or medical intervention.

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