

Using Demirijin's 7 Teeth And 8 Teeth Method Applying Dental Age Estimation

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Citation Of This Article: Dr Poornima Davadoss, Dr Charvi Gupta, Dr Ashwin.K.S, "Using Demirijin's 7 Teeth And 8 Teeth Method Applying Dental Age Estimation", IJDSR – January - February - 2020, Vo2. – 2, Issue -1, P. No. 41-44.

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Type of Publication: Original Research Article

Conflicts Of Interest: Nil

Abstract

The most common dental age estimation methods are Nolla & Demirjin's. Demirjin's being the more result oriented method of age estimation.

Aim and Objective

To evaluate the Dental age estimation using Demirijan's 8 teeth method and 7 teeth method.

Materials and methods

The sample for the study consisted of 431 individuals aged between 6-18 years. The chronological age of the patient will be obtained by official birth certificate.

1. Radiographic age estimation of the selected sample was done after analyzing Orthopantomograph using both Demirijan's 7 teeth and 8 teeth method. The chronological age was then statistically compared with

the results obtained by the radiographic age using SPSS v16 software.

Results

2. The estimation of dental age estimation using Demirijan's 7 teeth method showed overestimation compare with Demirijan's 8 teeth method.

Conclusion

Dental age estimation using Demiijan's 8 teeth method reduces the margin of error in correctly estimating age

Keywords

Demirijan's method .chronological age, dental maturity.

Introduction

Demirijan's method arrived at an age estimation by classifying the development of teeth in to Eight classification stages that represents the crown and root

calcification to the apex closure easier. Demirjian's used only seven left mandibular teeth and gender specific maturity score was assigned to each teeth. The score were summed up and compared with centile charts to arrive at age, but the reliability under this method was lacking (Demirjian's et al., 1973). This method can only used in individual above 16yrs.as only seven teeth were included to overcome this 3rd molar for the age assessment of 14 children Belgian here added and regression formulas were derived for age assessment which included 2 additional stages for easier calculation (Chaillet et al., 2004). This is the first study of Dental age estimation to be conducted in population of Kota region (Rajasthan) .

Materials and Method

Sample Description The study sample consisted of panoramic radiographs of 431 subject (219 males and 212 females) from Kota region of Rajasthan, India visiting the department of Oral and Maxillofacial Radiology for radiologic examination between the age group of 6-18 years.

Inclusion Criteria

Inclusion criteria of panoramic radiographs of subjects included were:

- Who had authentic official birth certificate.
- Free of obvious developmental, nutritional, endocrinal and mental disorder.
- Complete mandibular permanent dentition (erupted/unerupted) included 3rd molar.
- Pre – treatment radiographs
- For Demirjian's modified method we added the third molar in the calculation of the
- Dental maturity score using the same method to obtain specific weighed score and predictable curves.

- In Demirjian's 8 teeth methods each tooth was staged from 0 – 9 and depending on the stage of calculation and sum of the scores gave a total maturity score (which was then substituted in the regression formula given by Chaillet and Demirjian's 2001)
- Chronological age of each subject was calculated as the difference between date of

Statistical Analysis

All the data was tabulated using Microsoft Excel and comparison was done using SPSS v16 software.

Result

A total of 431 subjects participated in the study aged between 6 – 18 years with a mean of 11.7 years. Out of these subjects 219 were males and 212 were females with a mean of 10.8 years and 10.7 years respectively.

A comparison of chronological age and Demirjian's 7 teeth method done using z test gave a p and r value of 0.037 (mildly signification) and 0.86 (moderately significant)

3. Respectively. A comparison of chronological age and Demirjian's 8 teeth method done using z test gave a p and r value of 0.031 (mildly signification) and 0.54 (mildly significant)

4. Respectively.

(Table 2)

5. For the 219 males the comparison of chronological age and Demirjian's 7 teeth method done using z test gave a p and r value of 0.021 (mildly signification) and 0.87 (highly significant) respectively. A comparison of chronological age and Demirjian's 8 teeth method done using z test gave a p and r value of 0.019 (moderately signification) and 0.75 (moderately significant) respectively.

(Table 3)

6. For the 212 female the comparison of chronological age and Demirjian's 7 teeth method done using z test gave a p and r value of 0.038 (mildly significant) and 0.69 (moderately significant) respectively. A comparison of chronological age and Demirjian's 8

7. teeth method done using z test gave a p and r value of 0.032 (mildly significant) and 0.81 (moderately significant) respectively.

(Table 4)

Discussion

Years in boys using Demirjian's method. In the same study, authors found greater underestimation using the Chaillet's method in Venezuelan children by 0.61 1.07 years and 0.48 0.92 year in girls and boys respectively, comparing with Demirjian's method which underestimated age by 0.1 1.04 year in girls and 0.23 0.93 years in boys respectively. Most studies indicated that original Demirjian's scores were inadequate. Kosy and Tandon (Kosy et al., 1998) showed the greatest mean overestimation in literate of 2.82 years for boys and 3.04 years for girls in South Indian children statistically significant overestimation of dental age using Demirjian's method was reported in many Caucasian Europeans, and many other nations (Farah et al., 1999). According to literature a significant underestimation of Demirjian's method was reported in Venezuelan and Indian children (Orhan et al., 2007) in order to improve accuracy of Demirjian's scores. Many authors suggested the adaptation of original method. Previous studies have shown overestimation of age in Indian population (Chaillet et al., 2004; Kosy et al., 1998). However all of them evaluated Demirjian's 7 teeth method and did not consider the third molar. A drawback of the Demirjian 7 teeth method was that, it excluded the third molar owing to its variability in

regard to size, shape and likelihood of congenital absence and also because of wide variation in its development. Nevertheless, this tooth is one of the few predictors available for the assessment of age in individuals of 16–23 years age group. Chaillet and Demirjian method utilized third molar and developed new maturity scores for age estimation in French children (Chaillet et al., 2004). Many of the studies in the past decades have focused on original Demirjian's method by rating seven teeth and eight calcification stages by the authors like Hegde and Sood (Hegde et al., 2002), Pechnikova et al. (Pechnikova et al., 2011), Farah et al. (Farah et al., 1999). As the reason of certain demerits, Chaillet and Demirjian modified the original method by including third molar tooth and by adding two extra stages, which became most popular since 2004 for age

Conclusion

In the present study 431 radiographs used for age estimation using Demirjian's 7 and 8 teeth method among Kota population and it is concluded that Demirjian's 8 teeth method was found to be more reliable in estimating age of subjects aged between 6 – 18 year when compared to Demirjian's 7 teeth method. Though Demirjian's 8 teeth method is widely used for estimating age, other methods should also be tried.

References

1. Chaillet, N., Demirjian, A., (2004). Dental maturity in South France: A comparison between Demirjian's method and polynomial functions. *Journal of Forensic Science* 49, 1059-1066.
2. Demirjian, A., Goldstein, H., Tanner, J.M., (1973). A system of dental age assessment. *Human Biology* 45, 221-227.
3. Farah, C.S., Booth, D.R., Knott, S.C., (1999). Dental maturity of children in Perth, Western Australia, and

- its application in forensic age estimation. Journal of Clinical Forensic Medicine 6, 14-18.
4. Gupta R, Rajvanshi H, Effendi H, Afridi S, Vuyyuru K.K, Vijay B, Dhillon M. (2014) Dental age estimation by Demirjian's and Nolla's method in adolescents of western Uttar Pradesh, Journal of Head & Neck physicians and surgeons 6, 50-56
 5. Hegde RJ, Sood PB. (2002) Dental maturity as an indicator of chronological age: Radiographic evaluation of dental age in 6-13 years children of Belgium using Demirjian methods. Journal of the Indian Society of Pedodontics and Preventive Dentistry 20, 132-138.
 6. Koshy S, Tandon S. (1998) Dental age assessment: The applicability of Demirjian's method in south Indian children. Forensic Science International 94, 73-85.
 7. Levesque GY, Demirjian A. (1980) The inter-examiner variation in rating dental formation from radiographs. The Journal of Dental Research 59, 1123-1126.
 8. Lee SS, Kim D, Lee S, Lee UY, Seo JS, Ahn YW, et al. (2011) Validity of Demirjian's and modified Demirjian's methods in age estimation for Korean juveniles and adolescents. Forensic Science International 211, 41-46.
 9. Orhan K, Ozer L, Orhan AI, Dogan S, Paksoy CS. (2007) Radiographic evaluation of third molar development in relation to chronological age among Turkish children and youth. Forensic Science International 165, 46-51.
 10. Pechnikova M, Gibelli D, De Angelis D, de Santis F, Cattaneo C. (2011) The "blind age assessment": Applicability of Greulich and Pyle, Demirjian and Mincer aging methods to a population of unknown ethnic origin. Radiol med journal 116, 1105-1114.
 11. prospective study. Kumar AG¹, Bansal A development in relation to chronological age among Turkish children and youth. Forensic Science International 165, 46-51.