# Age estimation from Permanent Maxillary Molar's Attrition of Haryana Population

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**Abstract**

Teeth are an excellent material in living and non-living populations for anthropological, genetic, odontologic and forensic investigations. The aim of the present study was to estimate the age using molar's attrition grading. A total of 135 Maxillary molar's were selected. The attrition conditions of the molar's crown were analyzed. Linear equations for age estimation were derived by mean of regression analysis. There were highly statistically significant correlation between molar's attrition and chronological age. When the age of individual remained completely unknown, the best estimates were provided by first maxillary molar.

**Key words**

attrition, age, molar, regression equation.

**Introduction**

Age determination plays a great role in forensic medicine pediatric endocrinology and is of particular interest in forensic odontology and treatment planning. The study of teeth to estimate the age of adult human beings, whether alive, as corpses or as skeletal remains, is widely accepted in forensic odontology. Teeth can easily be inspected in living people, and may be preserved for a long time after death. In children, age determination from the teeth is relatively simple and accurate; it is based on the stage of development and eruption of teeth. In adults, estimating age is more problematic. Out of many stomatological criteria the most common ones for estimation of age at death of adult individuals involve changes in the hard tissues[1-4]. Use of the attrition condition of the permanent tooth crown to estimate age is very convenient and accurate method using not only incisors, bicuspids and molars but also all 28 teeth excluding third molars [5-6]. No such study has been carried out in Haryana subjects. The present study endeavors to establish the effectiveness of attrition in predicting age in Haryana population and preparing regression equation for Haryana population.

**Materials and methods**

The sample used in this study consists of the first and second molars derived from 200 subjects which is provided by Dr. Sahib Singh Dental clinic (Jhajjar), Jain Diagnostic Centre and Bhagwan Dental Clinic (Jind). Restored crown, Dental caries, fractured and false teeth were not involved. The sex, age, reason of extraction, position on the jaw and address were recorded. The age range is 20-80 years , but the average age is 41.8 years. The grading of attrition estimated as previous study[7]. The data were analysis by SPSS version 11.0 and student 't' test were applied.

**Results**

Six regression equations for age estimation using attrition stages were obtained by means of linear regression (Table I).

**Table-I : Regression equations for age estimation from Haryana population**

| Jaw | Equation | (r) | SD |
|---|---|---|---|
| Maxilla | $B = 12.82+5.46\ M_1$ | 0.94 | 4.32 |
| | $B = 13.84 + 6.82\ M_2$ | 0.93 | 9.64 |
| | $B = 13.36 + 3.82\ M_1 + 1.86\ M_2$ | 0.96 | 3.85 |

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For testing these regression equations, a blind fold test was carried out. The sample was derived from forensic case (from forensic medicine, PGIMS, Rohtak). The results were showed in Table-2.

**Table - 2.** ***The results of blind fold test using so forensic cases.***

| *No* | *Sex* | *Actual age (x)* | *Estimated age (y)* | *x – y* |
|---|---|---|---|---|
| 1. | Male | 40 | 38.21 | 1.79 |
| 2. | Male | 38 | 36.41 | 1.59 |
| 3. | Male | 70 | 68.82 | 1.18 |
| 4. | Male | 68 | 71.83 | - 3.83 |
| 5. | Male | 46 | 56.43 | - 0.43 |
| 6. | Male | 21 | 23.43 | - 2.43 |
| 7. | Male | 27 | 32.65 | - 5.65 |
| 8. | Male | 56 | 52.82 | 3.18 |
| 9. | Male | 42 | 43.82 | - 1.82 |
| 10. | Male | 37 | 32.82 | 4.18 |
| 11. | Female | 43 | 41.82 | 2.18 |
| 12. | Female | 63 | 61.85 | 1.15 |
| 13. | Female | 59 | 57.67 | 1.33 |
| 14. | Female | 42 | 40.83 | 1.17 |
| 15. | Female | 56 | 54.91 | 1.09 |
| 16. | Female | 33 | 29.43 | 3.57 |
| 17. | Female | 24 | 29.34 | - 5.34 |
| 18. | Female | 46 | 48.43 | - 2.43 |
| 19. | Female | 22 | 73.24 | - 1.24 |
| 20. | Female | 28 | 32.43 | - 5.43 |

**Discussion**

Methods for determination of age from teeth are of great value form both the dental and medical points of view. Although various methods for age determinations do exist, a universal system has not been achieved due to the varying differences in different ethnic population groups. This study was done with the main objective of trying to determine the dental age of Haryana population using an attrition marker. It has been showed that diet and manner of food preparation have a important role in dental attrition. So we were selected a population, whose takes approximately same types of food i.e vegetarians the present study showed a

statistically significant in previous study by authors molar were not taken because their eruption times are variable and there are many impacted molars [7-8] the results of the blind fold test in table-III is fluctuate around the actual ages in a small range but higher than previous study [7]. It may be due to small sample size, environmental factor and genetic factors. The SDS of the equations using the first molar is less than those of second molar. Hence by using the first molar to estimate the age of death is more reliable which support the previous study[7] while contrary with other study [9]. Ethnic differences between populations dictate that new scores and grading criteria are needed for individual populations as it is observed further studies are needed with extensive and large numbers of samples in order to improve and apply in medico-legal purpose.

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