



## G1 The Third Molar Cut-Off Value in Assessing the Legal Age of 18 in the Saudi Population

*Sakher J. AlQahtani, PhD\**, College of Dentistry, King Saud University, Riyadh 11545, SAUDI ARABIA; *Alemad Kawthar, BDS*, King Saud University, College of Dentistry, Riyadh 11545, SAUDI ARABIA; *Ayman AlAraik, BDS*, King Saud University, College of Dentistry, Riyadh 11545, SAUDI ARABIA; and *Ahmad AlShalan, BDS*, King Saud University, College of Dentistry, Riyadh 11545, SAUDI ARABIA

The goal of this presentation is to assist forensic odontologists with the age assessment process for cases in which there is a question as to whether or not legal age has been attained, with emphasis on the use of the method with a specific ethnic population.

This presentation will impact the forensic science community by providing population-specific evidence of the cut-off values in dental development for the age of 18 years.

Teeth can play a major role in forensic sciences, especially in age assessment of an individual, which can be an issue in various criminal or civil matters. Teeth can be of significance due to the fact that they survive in extreme conditions and are affected very little by exogenous and endogenous factors. The third molar is the only tooth that is still developing at the age of 14 years and also during the legal age of adulthood, which is generally 18 years. The consequences of a criminal conviction can strongly affect the individual's subsequent life; therefore, it is crucial to properly set different parameters to predict whether an individual is a minor or an adult in the absence of acceptable supporting documents. Depending on the different legal requirements, such parameters can be set above a 90% probability for criminal matters and at 51% for civil matters (but note that "90%" is not a defined standard for criminal matters).

**Goal:** The goal of this research was to find the appropriate cut-off value of third molar development for the legal age of 18 years among Saudi individuals by using the third molar maturity index method by Cameriere et al.<sup>1</sup>

**Materials and Methods:** This was a cross-sectional study using 300 archived Orthopantomograms (OPGs) of healthy Saudi patients between the ages 14 and 22 years attending the Dental Hospital at King Saud University, Riyadh, Saudi Arabia. All OPGs were taken with a PLANMECA ProMax machine and were evaluated using Romaxis® software. The inclusion criteria were good quality OPGs taken during the course of treatment. All patients were healthy with no systemic diseases or disorders with the presence of third molars and clear root apex.

The Lower Left mandibular third Molar (LL3rd M) was assessed using the third molar maturity index (I3M) in order to estimate whether the individual was younger or older than 18 years of age.

**Results:** The cut-off value of I3M for the Saudi population was (I3M <0.08). The sensitivity of this method was 51.7% and the specificity was 98.5%. Early mineralization was found in males, except in the I3M ranges (0.0-0.4) and (0.9-1.7). Cameriere et al.'s method results were reproducible with a good measure of reliability.<sup>1</sup>

**Conclusion:** This method is suitable for assessing the attainment of legal age of adulthood in the Saudi population, and the cut-off value of I3M is similar to other populations. Although dental age assessment by means of third molar development is useful, it still has some limitations because of variation in individual tooth position, morphology, and development.



## Odontology - 2017

---

### Reference(s):

1. Cameriere R., Ferrante L., De Angelis D. The comparison between measurement of open apices of third molars and Demirjian stages to test chronological ages of over 18 years old in living subjects. *Int J Leg Med.* 2008; 122(6): 493-7.
- 

### Legal Age, Cut-Off Value, Age Estimation