

# Third molar cut-off value in assessing the legal age of 18 in Saudi population

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## ABSTRACT

Teeth plays a major role in forensic sciences especially in age assessment of an individual, which can be used to aid in criminal or civil matters. The importance of teeth comes from their ability to survive inhumation well and because they are hardly affected by exogenous and endogenous factors. Third molars are the only teeth still developing after the age of 14 years and during the legal age of adulthood, which is 18 years. The consequences of criminal violation can strongly affect the individual's life, it is important to set different parameters to decide whether an individual is a minor or an adult in the absence of documents. Depending on the different legal requirement, such parameters can set above 90% probability for criminal matters and from 51% to civil matters.

**Aim:** The aim of this research was to find the cut-off value of third molar development for the legal age of 18 amongst Saudi individuals using the third molar maturity index method by Cameriere et al., 2008.

**Materials and methods:** This was a cross sectional study on 300 archived Orthopantomogram (OPG) 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 by PLANMECA - ProMax machine and evaluated by the 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 third molar maturity index (I3m) to determine if the individual is younger or older than 18 years old.

**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 when I3m was ranging from (0.0 - 0.4) and (0.9 - 1.7). Cameriere et al. test was reproducible with good measure of reliability.

**Conclusion:** This method is suitable for assessing the attainment of legal age of adulthood in 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 its limitation because of its variation in position, morphology and development.