

The accuracy of the London Atlas of Human Tooth Development and Eruption in dental age estimations of Saudi, Spanish, and Italian children

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ABSTRACT

Schemas of dental development are used frequently to assess maturity and estimate dental age, yet there are still scarce evidence on their accuracy when used in different populations. The aim of this study was to test and compare the accuracy of The London Atlas of tooth development (1) when used for dental age estimation in Saudi, Spanish and Italian populations.

Materials and Methods: The sample consisted of 400 Saudi, 400 Spanish and 300 Italian males and females between the ages 6-15 years. Inclusion criteria were good quality, clear panoramic dental radiographs (OPGs) of healthy patients with no medical history of systemic diseases/disorders. Exclusion criteria were: unclear radiographs, hypodontia (one or more missing teeth), Hyperdontia (one or more extra teeth), Gross pathology (Torodontism, microdontia, Amelogenesis Imperfecta, Dentinogenesis Imperfecta, tumors, abscesses, fractures, etc.), presence of gross caries or previous orthodontic treatment. Age estimation was done using The London Atlas of Tooth Development and Eruption on the left side of both upper and lower jaws by direct comparison with the diagrams.

Chronological age (Real Age) was blinded from the researchers up until all radiographed were assessed and age estimation was completed. All data managed and analyzed using SPSS program (v24). Inter and Intra-examiner reliability test were done on a random 10% sample from the radiographs using kappa.

Results: Intra-examiner reliability test was (0.9) and the Inter-examiner reliability test was (0.87), which shows excellent agreement.

Mean difference between Estimated Age (EA) and Real Age (RA) in all populations combined was 0.21 years with Standard Deviation (SD) of 0.978 years and absolute mean difference of 0.645 years.

The Saudi population showed the mean difference between EA and RA to be 0.247 years (SD 0.769 years) with no Bias (p 0.08) and the absolute mean difference was 0.620 years. The Spanish population showed the best mean difference (0.099 years) but with the largest SD (1.09 years) with no Bias (P 0.071) and the absolute mean difference was 0.857 years. Whereas in the Italian population the mean difference was 0.451 years with a standard deviation of 0.965 years with positive no bias (P 0.006) and the absolute mean difference was 0.782. There were no statistically significant differences between populations.

Conclusion: The Atlas of Tooth Development is applicable to the Saudi, Spanish and Italian populations with good measures of accuracy.