



F20 Protocol for a Systematic Review of Human Dental Age Estimation Studies

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After attending this presentation, attendees will be informed step by step how a review of human dental age estimation studies can be performed and reproduced in an unbiased way.

This presentation will impact the forensic science community with a guideline classifying the different age estimation studies and related methods. It will reveal tools to compare and evaluate within each category the age predicting accuracy of the included study outcomes.

Teeth are assessed for age estimation because their changes in development, morphology, and biochemical structure can be related to the chronological age of an individual. Diverse dental age predictors can be registered in a tooth conserving or tooth destructive way. The sampled data are statistically approached and analyzed to develop specific age estimation methods. Supplementary information related to the gender, ethnical or geographical origin, medical history and living condition of the sampled individuals influences with variable weight the applied dental age estimation methodology. The different dental age estimation methods can be divided in specific groups: (1) methods based on developing teeth can be divided on the one hand in methods based on growth of all teeth except third molars and on the other hand methods based on third molar maturation; (2), methods based on mature teeth, contain a group of methods analyzing intact teeth and methods destructing teeth for age estimation examinations; and, (3), age can be predicted comparing a presented dental variable with a corresponding variable listed in common age related tables or atlases. In each of previous groups age is predicted following a particular method. This protocol aims to describe step by step the procedures to perform a systematic review of dental age estimation method studies in an attempt to classify the studies in defined groups enabling to evaluate the diagnostic accuracy of the included dental age estimation methods.

The systematic review will include studies presented to the scientific community by publication in a peer-reviewed journal, a book or in a doctoral thesis. All included studies should be written in English. They should describe the development, the evaluation or the comparison of dental age estimation methods, or they should report relations between dental variables and chronological age by means of common tables or a (n) atlas(es).

Two reviewers will screen, independently, in a first stage the titles and abstracts of all collected records and select papers for inclusion. In a second stage, full text of the studies selected in stage one will be screened and a lists of detected inclusion and exclusion criteria will be composed. Disagreements between reviewers will be resolved by mutual discussion.

The quality of each accepted study will be assessed, independently by two reviewers, using the Quadas tool. An initial search of Pubmed will be undertaken followed by an analysis of the text words in the title, abstract and the index terms used to describe the articles. Next, a search term will be established and used across the considered digital archives.

Out of each included study following characteristics related to the used dental age estimation method, together with related specific criteria will be extracted: the sample size; the considered teeth; the used dental variables; the dental variable outcomes; and, the study outcomes.

Specific outcome analyses will be established for each of the obtained dental age estimation study group in an attempt to compare the accuracy of age predictions between studies within a group and possibly between groups.

Forensic Odontology, Age Estimation, Systematic Review