

REVIEW

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Member of the Scientific Jury according to order No P-109-240/ 06.06.2022 of the Rector of MU-Varna

PhD-Thesis:” Evaluation of individual indicators for orthodontic treatment of children with mixed and permanent dentition”

Author: Dr. Iliyana Georgieva Atanasova

The dissertation contains 138 pages, 39 tables, 55 figures, 5 schemes and 16 application, 161 literary sources were cited.

Relevance of the PhD-thesis:

The dissertation thesis presented is extremely relevant to contemporary orthodontics. Choosing the right time for orthodontic treatment is an ability inherent in a skilled orthodontist. It is based on in-depth theoretical training and clinical experience. All accumulated knowledge related to this problem are in favor of proper, short as possible and successful outcome of orthodontic treatment.

The literature review: demonstrated thorough and in-depth knowledge of the topic. It outlined number of issues on the topic such as • theories of growth and development • growth direction and timing of growth of maxillofacial structures • development of dental arches • methods of evaluation of morphologic, skeletal, dental and circumpubertal ages.

Purpose: The aim of the Dissertation is by examining individual indicators of the pubertal growth period to create a prognostic model on orthopantogram for the initiation of orthodontic treatment.

To fulfill the goal thus formulated, **four tasks** have been set.

Material- The selection of 320 children- outpatients included in the survey was carried out according to the initially set criteria. Analysis of ortopantomogram and lateral cephalogram records were performed of all studied subjects.

Methods of the study: The patients studied were divided in different groups based on age and gender. The dental age and skeletal age were assessed for every subject evaluated. A comprehensive statistical analysis was conducted to prove the results of the survey.

Results:

Regarding Task 1:” To conduct a study to assess the dental age of children in mixed and permanent dentition aged 7-16 years by using the methods of Demirjian and Willems. To determine the accuracy of each method (up to 0.5 years) relative to the chronological age and between them.”

A study of the dental age was conducted by two methods – Demirjian and Willems. A comparison was made between the two methods, which of them has greater accuracy for the specified age groups, as well as accuracy by gender.

Regarding Task 2: “To determine the mean chronological age of the onset of pubertal growth peak defined by the method of cervical vertebrae maturation. The stages of growth by age and by gender for the Bulgarian population have been determined.

Regarding Task 3:” To determine the mineralization stages of mandibular canine (33), mandibular second premolar (35), mandibular second molar (37) and mandibular third molar (38) in the left lower quadrant, as well as maxillary left canine (23) relative to the stages of maturation of the cervical vertebrae”. Comparing the degree of development of the root of the teeth in the third quadrant to the stage of the maturation of the cervical vertebrae is a valuable result. This makes the prognosis for choosing the appropriate time of treatment individualized with aid of routine and popular x-ray diagnostic record as the orthopanthogram.

Regarding Task 4 :” To determine the correlation between the stages of mineralization of the teeth examined in Task 3 and the stages of maturation of the cervical vertebrae CVM II, CVM III, CVM IV of Baccetti method, by specifying indicators of the puberty development on the orthopantomogram and to provide guidance for the initiation of orthodontic treatment.” The relationship between the maturation of the cervical vertebrae and the mineralization of the teeth in the "support zone" – canine, second premolar and second molar separately in boys and girls was examined in detail. These results provide a good guidance to choose the proper time of orthodontic treatment onset.

Conclusions:

The 10 conclusions formulated were extremely useful and focused on determining the time of treatment. Many in-depth studies have been conducted to compare chronological, dental and skeletal age in boys and girls. The conclusions formulated are of considerable benefit to orthodontic practice.

The submitted Abstract of dissertation meets the requirements.

Personal impressions: Dr. Iliyana Atanasova is an excellent orthodontist – clinician. Her scientific searches prove her substantial clinical knowledge. Comparing the more contemporary method of Willems with that of Demirjian, which is widely used, allows revising the importance of the dental age of patients, taking into account acceleration and making suggestions for choosing appropriate time for treatment. At the same time, the compliance of the most appropriate dental age with the maximum growth determined by assessing of skeletal age was examined in details.

Recommendations -I recommend the author and her scientific supervisor to issue and popularize this thesis and extremely important results for the most appropriate time for initiation of orthodontic treatment among Bulgarian orthodontic society. This will optimize significantly the duration of orthodontic treatment.

In conclusion: I give a positive assessment of the dissertation, scientific study conducted, the abstract, results obtained and contribution made. I invite the esteemed scientific jury to award Dr. Iliyana Georgieva Atanasova, with the educational and scientific degree "Doctor" in the scientific specialty "Orthopedic Dentistry".

A handwritten signature in blue ink, appearing to be 'Laura', with a stylized flourish at the end.

4th of July, 2022

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City of Sofia