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ORIGINAL PAPER

ANTHROPOLOGICAL STUDY ON THE ORO-DENTAL HEALTH OF A GROUP OF TEENAGERS

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Abstract. Our research addressed the issue of periodontal health in a multi and interdisciplinary manner, in a group of teenagers, from the standpoint of biological anthropology (somatic development, constitution, evolution, sexual dimorphism).

We examined the health aspects of the periodontium and teeth depending on chronological age and sex, with their bio-anthropological, endocrine and social implications.

Other objectives examined were linked to the chronology and succession of the dental eruption.

After the study was conducted, we noticed severe degradation of the periodontal and dental health in the studied teenagers, degradation that increases with the age.

Additionally, a close correlation was observed between human factors (biological, physiological) and the socio-cultural background of the individual with his/her periodontal and dental heath.

Keywords: dental eruption, anthropology, dental age, biological age.

The research we have conducted addressed the issue of periodontal health in a multi and interdisciplinary manner in a group of teenagers, investigating some aspects linked to the oro-dental health (health of the periodontium and dental structures) depending on the chronological age and sex, with their bio-anthropological, endocrine and social implications. Other objectives examined were linked to the chronology and succession of the dental eruption.

The study material consisted of 800 subjects aged 13-17 years, pupils from two high schools in Bucharest. The investigation method used was a cross-sectional survey.

In determining the periodontal health, the WHO's statement was used, especially drawn up for this purpose by the research team under the coordination of professor M.D. Ph.D. P. Firu, statement from which the data on the periodontal and

tooth health were processed for each investigated subject, calculating the frequency index of the dental caries (C.A.O.), the intensity index (C.A.O.S.), as well as the variations of dental eruption.

For the anthropological characterisation the standard form was used which is used by the research team in auxological anthropology of the Centre of Anthropological Research in their researches on the growth and development of children and young people.

The constitutional type was determined according to Brian's method. The degree of sexual maturity was assessed according to the I.B.P. sheet (Tanner) and endocrine dysfunctions through anamnesis and clinical examination. The social environment was determined based on the parents' socio-cultural training and the number of children in the family.

The ontogenetic characteristics of the studied period have a differentiated significance, as biological process, based on gender. If in the case of boys this period covers the whole time frame of puberty, in girls we notice just its final stage, given boys' retard of about two years compared to girls as to the beginning of this process. The end of girls' puberty occurs much faster than in the case of boys (about 14 years for girls compared to 16 to 17 years in the case of boys).

Therefore, girls' puberty occurs earlier (12-13, maximum 14 years) and in less time, which implies a higher effort of the body reflected by physiological disorders more noticeable in girls than in boys (14-16, maximum 17 years).

In the first stage we have intended to examine the aspects linked to periodontal and teeth health according to chronological ages and gender, with their bio-anthropological, endocrine and social implications.

The periodontal status is relatively good at 13 years (70% girls and 75% boys, which means a healthy periodontium and good oral hygiene).

After this period a process of degradation of both hygiene and periodontal health begins in both sexes, more pronounced in girls by 7%, up to 15 years.

After 15 years we witness an improvement in health and periodontal hygiene acceptable only in girls (72%), while in boys the process of degradation continues until they reach the age of 17 (61%).

At first sight we notice a positive correlation between the periodontal health status and the number of healthy teeth (for 13 and 14 years). But after 15 years, regardless of the health of the periodontium the number of healthy teeth in percentage reaches a plateau, the degree of their impairment increasing only with the age. The number of irrecoverable teeth is higher in boys - and we can make a correlation with their poor dental hygiene.

If we take into consideration the social factor, we see there is a better hygiene among the category with intellectual parents and fewer children in the family, as a result of the early establishment of the rules of oral hygiene and due to the awareness of its importance and skills acquired in the family.

It should be mentioned that girls have generally better oral hygiene than boys regardless of their social backgrounds, especially starting from the age of 15, with the end of puberty, which entails a particular concern for the aesthetic aspects.

The evolution of the health of teeth was evaluated from both the viewpoint of the frequency of caries and their intensity.

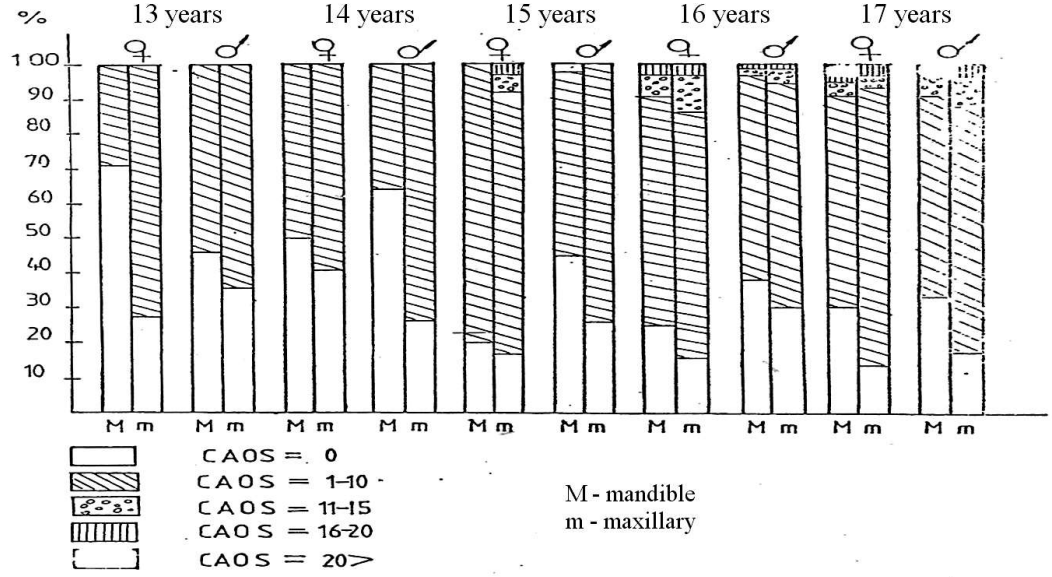

Fig. 1 The intensity degree of CAOS dental caries by age and sex

We note a difference of impairment between the maxilla and mandible, the mandible being more damaged both in terms of frequency percentage and intensity in both sexes.

From 13 to 17 years the number of healthy teeth decreases rapidly from 70% to 30% for the maxilla and from approx. 40% to 14% for the lower jaw in girls, compared to boys, in whom they decrease from 65% to 35% for the maxilla and from 45% to 20% for the teeth of the mandibular arch.

After the age of 15 (for girls) and 16 (for boys) we encounter high and very high values of C.A.O.

We should note the relations between C.A.O. and C.A.O.S., the girls being more affected than boys up to 17 years old, when our group of boys starts to be more impaired.

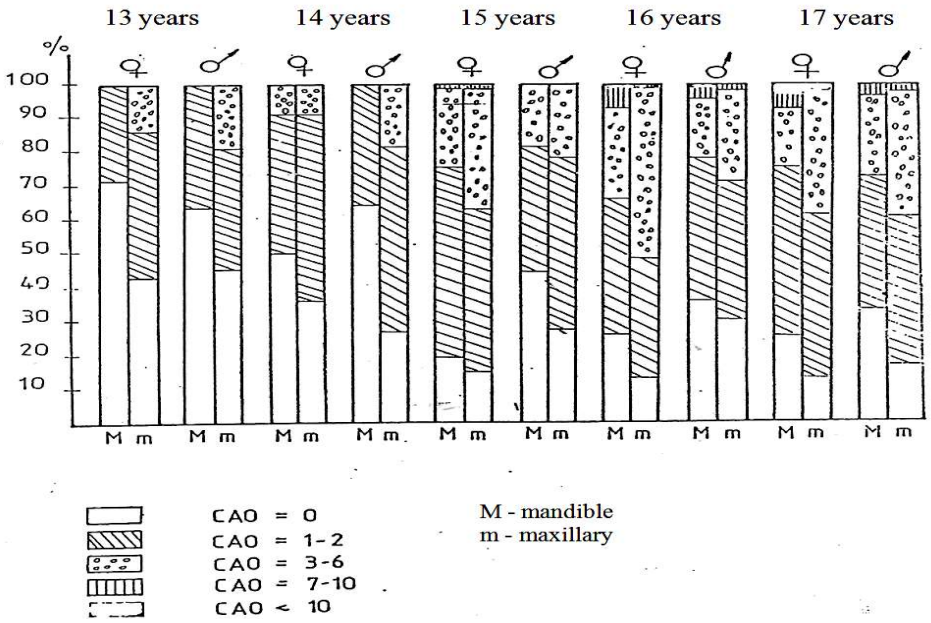

Fig. 2 The degree of damage dental CAO by age and sex

In terms of constitution, we can find the highest frequency of both carious teeth and decayed surfaces in the willowy type. This process is more noticeable in willowy boys (70%-85%) than in slender girls (65%-75%). Between the medium-sized and the brevilineal types the differences are not significant.

From the endocrine point of view, we discovered a relationship between the high number of caries and their intensity in girls presenting thyroid disorders, this relationship being extremely high (85%). Also, in the girls presenting both a delayed puberty and an irregular menstrual cycle we found the same positive relationship (90%) with an extremely damaged dentition.

As regards the relationship between the presence of spasmophilia and that of decayed teeth this is more obvious in boys. Also, there is a high frequency of caries among the boys presenting an early puberty (80%), the other way around than in girls.

From the point of view of ***the dental eruption*** *at 13 years we can say that in both sexes there is a quite significant retardation of the dental age versus the chronological age, which is fully in line with a retardation of the sexual maturation and somatic development and retard in attaining the constitutional type specific to the respective age.*

Table 1. Table summarising the dental eruption depending on the arch and sex (years, months).

	CI years	LI years	C years	P1 years		P2 years	M1 years	M2 years	M3 years
	superior								
B.	6.7-8.4	7.4-9.3	9.8-12.8	8.2-12.1	9.6-13.1	6.1-6.9	11.6-13.7	18.3-?	
G.	6.6-7.7	7.3-9.2	9.9-12.6	9.4-11.0	9.7-12.7	5.7-6.4	10.8-13.2	19-?	
	inferior								
B.	6.3-7.2	6.8-8.6	9.5-12.1	9.4-12.8	10.1-13.2	5.3-6.4	11.4-13.3	18.2-?	
G.	6.5-6.8	6.7-7.9	9.4-11.1	9.4-11.4	9.8-13.2	5.6-6.5	10.8-12.7	18.8-?	

CI - central incisors, LI - lateral incisors, C-canines, P-premolar M-molar

Table 2. Sexual dimorphism of dental eruption (years, months).

	CI years	LI years	C years	P1 years	P2 years	M1 years	M2 years	M3 years
B.	6.4-8.2	7.0-9.1	9.5-12.6	8.1-12.7	9.5-13.1	5.4-6.9	11.2-13.7	18.2-?
G.	6.6-7.8	6.8-9.2	9.2-12.5	9.7-11.4	9.8-13.1	5.6-6.7	10.8-13.5	18.4-?

The eruption of the third molar, more precocious in girls, but much less frequent than in boys is directly linked to an accomplished puberty for each age in girls. The brevilineal type in whom secondary sexual characters are very pronounced for each age category exhibits a more frequent presence of the third molar (especially in boys).

The evolution of irrecoverable teeth by age and sex indicates an alarming increase between 14-17 years - chiefly among boys.

The comparative study of the dental condition, both in the boys and girls of the study group, revealed differences not only depending on the gender of the subjects, but also in relation to the position of the teeth on the mandibular (lower), respectively on the maxillary (upper) arches. Concurrently the authors conducted a comparative study with the results of the investigations carried out on the previously studied subjects in other geographical locations in Romania.

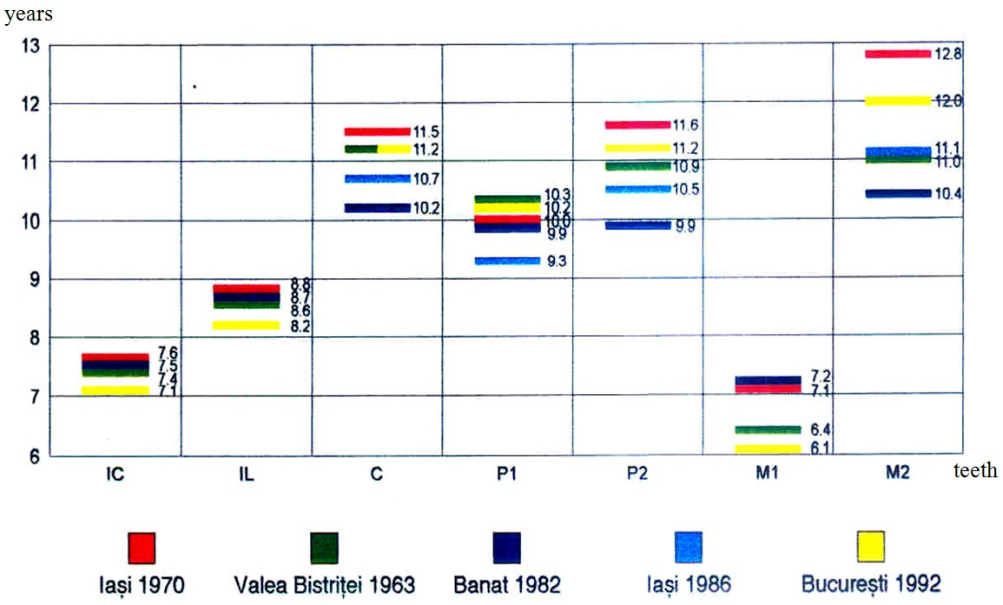

Fig.3. Comparative status of permanent dentition in girls - maxillary arch

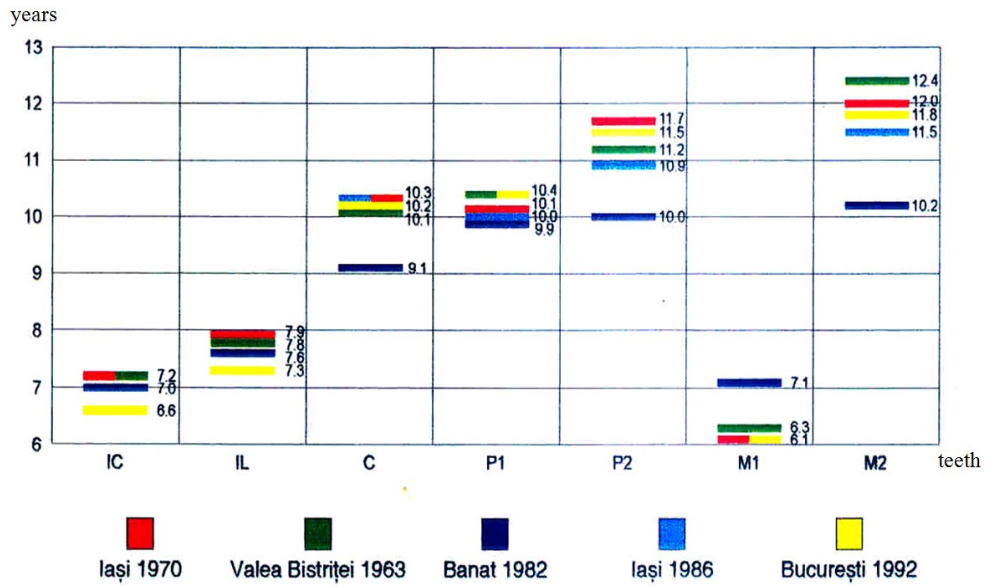

Fig. 4. Comparative status of permanent dentition **in girls** - mandibular arch

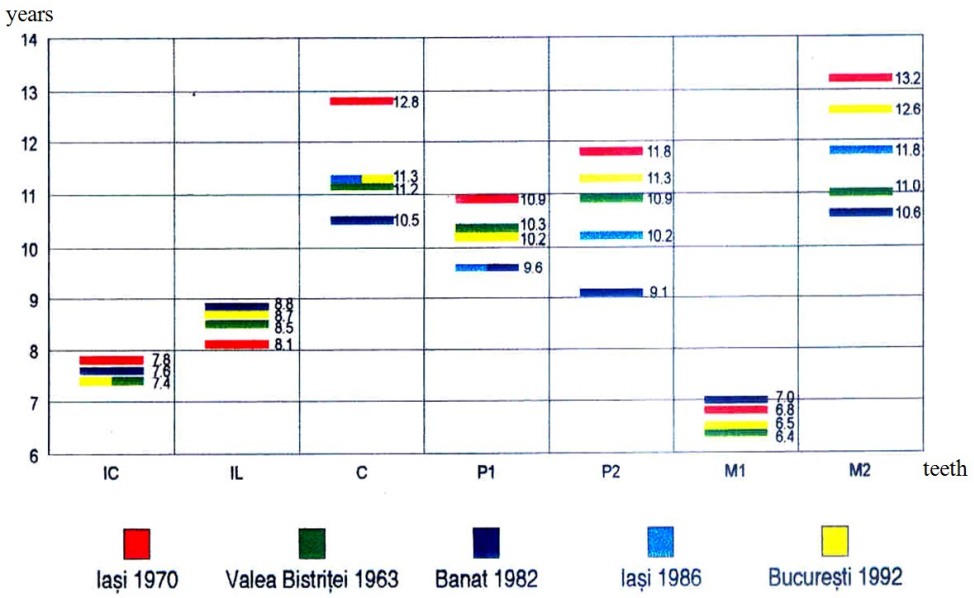

Fig. 5. Comparative status of permanent dentition **in boys** - maxillary arch

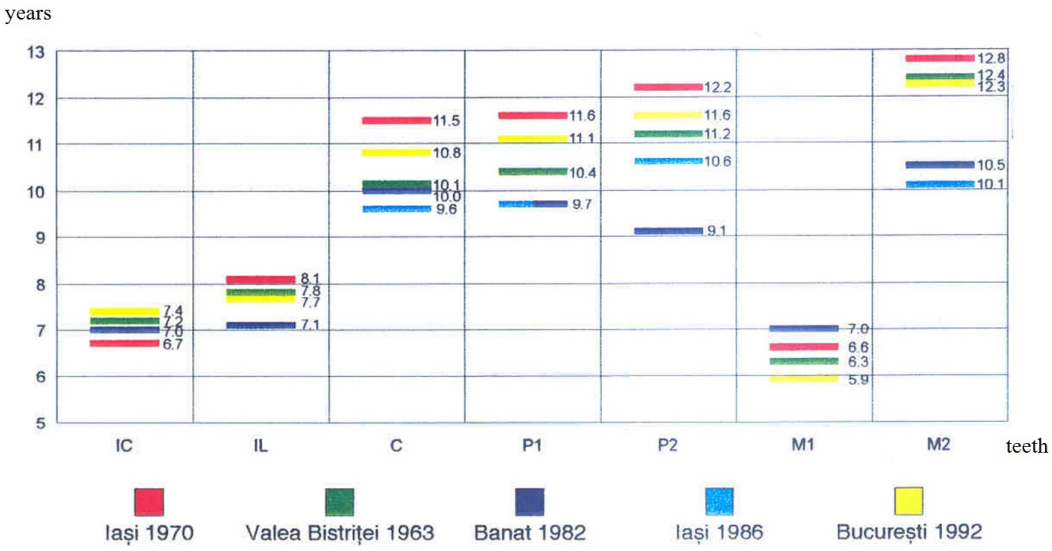

Fig.6. Comparative status of permanent dentition **in boys** - mandibular arch

With respect to the treatment of dental caries girls seem to be more concerned about their dental beauty, which is associated with a better oral hygiene.

We should point out the relationship between the social environment and the treatment of diseases and disorders of the oral cavity which is by far superior among the categories of subjects coming from the intellectual environment compared to the other two groups, irrespective of their gender.

Conclusions

After having conducted this study we can state that:

- We have noticed a high degradation process of the periodontal-dental health in the studied teenagers, which increases with the age.
- The health of teeth depends largely on genetic determinism, but the influence of environmental factors can lead to a stagnation of the degradation process or to its acceleration.
- There is a strong interaction between human factors (biological, physiological) of the individual and the socio-cultural ones and the dental-periodontal health status thereof.

The conclusions of the study may materialise in:

- The positive relation between the degree of sexual maturation and the concern about the preservation of oral hygiene, which explains the sexual dimorphism encountered after 15 years of the health of teeth and periodontium, which is greater in girls than in boys. This fact is psycho-biologically based on the retarded maturation of boys compared to girls.
- The retard or advance phenomena of somatic development and sexual maturation are accompanied by delays or accelerations of the dental eruption; thus, for example, subjects with early bio-sexual maturation also present an early tooth eruption.
- Constitutionally and somatically speaking, the willowy types seem to be more affected during this period in terms of dental health. From the endocrine point of view, thyroid disorders, more pronounced in girls during this period, correspond to the high and very high tooth decay; and spasmophilia correlated with dental caries in the same manner in boys.
- The strong influence of the family's socio-cultural environment on oral hygiene determines both a better preservation of the health of teeth and periodontium and a timely treatment of caries formed in the earliest stages, in children coming from families of intellectuals, thus avoiding premature edentation.

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