STATISTICAL STUDY REGARDING THE INCIDENCE OF DENTOMAXILLARY ABNORMALITIES IN CHILDREN AND TEENS IN BRĂILA

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ABSTRACT

Aims : The purpose of the study is to establish on a specific group of patients the frequency of dento-alveolar disharmonies in children and adolescents according to childhood and adolescence age, gender, environement, type of dentition, clinical dental anomalies, and recommendations given after first clinical examination (complementary radiographic exams, dental-periodontal odontal prophylaxis, dental and orthodontic treatments).

Material and methods: The study was performed on a group of 517 patients, the age between 6 and 18 years over a period of 2 years (2018 și 2019), examined in an dental office in Brăila, patients being informed and accepting to participate in the study .

Results and discussions : The results of this statistical study show the frequency of dento-maxillary anomalies among children and adolescents who requested orthodontic consultation in a orthodontic office in Brăila. If in the case of children the parents were the ones worried about the eruption of the permanent teeth (especially for the alignment of the incisors), the teenagers were those who requested the correction of crowded and misaligned teeth, for a good smile and dental aesthetics, to increase self-confidence and self-esteem and for integration and acceptance in age-specific social groups.

Key words : children and teenagers, dento-maxillary abnormalities

INTRODUCTION

Orthodontics is the specialty of dentistry interested with the management of orofacial anomalies and malocclusion and involves treatment of children, adolescents and, increasingly, adults. Malocclusion is a variation on normal occlusion characterized by class I molar and incisor relationships, with well-aligned teeth and maximum intercuspation[1,2,3]. The occurrence of an acceptable occlusion is multifactorial, although important factors include the size of the jaws; the relationship of the jaws to each other; the size, number and morphology of the teeth; and the morphology and behaviour of the lips, tongue and peri-oral musculature.[4,5,6] Therefore, when specific pathologies are identified, an interaction with the appropriate healthcare provider who is treating the patient should occur, or a referral made to another specialist. The advice obtained from these experts can have a substantial impact on the orthodontic diagnosis and treatment plan. Continuing advances in medicine and dentistry increase

the aim, importance and value of these interactions[7,8,9].

The orthodontist is taught to perform a complete oral examination of the patient and to develop a treatment plan from the examination findings. Then the orthodontist makes a case presentation to the patient or parents, outlining the recommended course of treatment. This process should include the development and presentation of a prevention plan that outlines an ongoing comprehensive oral health care program for the patient[10,11]. The plan should include recommendations designed to correct existing oral problems or halt their progression and to prevent anticipated future problems. It is essential to obtain all relevant patient and family information, to secure parental consent, and to perform a complete examination before embarking on this comprehensive oral health care program for the young patient[12,13,14].

The demand for orthodontic treatment has increased universally, particularly over the past two decades in our office. A desire to enhance dental appearance is the underlying motivation for most patients who seek orthodontic treatment[15,16,17]. Deviation from occlusal norms may leave children susceptible to harassment, teasing and bullying, with obvious psychosocial implications Consequently, orthodontic treatment may have significant psychosocial benefits and can often lead to improved oral health-related quality of life[18,19,20,21]. The undoubted benefits of orthondontics are, however, reliant on careful diagnosis, planning and management. Clinical assessment and radiographic analysis are central to the formulation of appropriate treatment decisions leading to the best aesthetic and functional outcome from orthodontic treatment.[22,23,24] As in any other area of medicine or dentistry, to reach a diagnosis in orthodontics requires a thorough history, examination and special tests[25,26]. A comprehensive history should be undertaken to clarify the motivation for treatment, the dental and orthodontic history, and any relevant medical history that might impact on the provision of orthodontic treatment[27].

MATERIAL AND METHODS

The study was performed on a group of 517 patients, boys and girls, the age between 6 and 18 years, over a period of two years, in an dental office in Brăila, the patients and their parents being informed and accepting to participate in the study . In 2018 were examinated for an orthodontic treatment a number of 274 pacients and in 2019 were examinated a number of 243 patients.

The most the frequent reasons for requesting orthodontic consultation and treatment are aesthetic, to correct the position of the teeth (most commonly dental crowding), but also to remove certain vicious habits (finger thrusting, mouth breathing, nail biting) which cause certain dental malpositions and malocclusion. Children were accompanied by their parents, reffered by dentists or worried about the "wrong" eruption of permanent teeth. Teenagers also come with parents, but are more motivated to straighten their teeth for a good smile and dental aesthetics, to increase self-confidence and self-esteem and for

integration and acceptance in age-specific social groups.

RESULTS

Of the total number of patients examinated at the orthodontic office in 2018 (N=274), they are represented by: 5 boys aged between 6 - 12 years from rural area and 25 from urban area, 10 boys with age between 12-18 years of age in rural area and 67 in urban areas; 11 girls aged between 6-12 years from rural area, 36 from urban area and 17 girls aged between 12-18 years and 103 girls in urban area. In 2019 year were examinated 243 patients (N=243) including : 7 boys aged between 6 - 12 years from rural area and 18 from urban area, 14 boys with age between 12-18 years of age in rural area and 54 in urban areas; 8 girls aged between 6-12 years from rural area, 33 from urban area and 11 girls aged between 12-18 years and 98 girls in urban area (table I).

Table I *Distribution of the studied group in 2018 and 2019, according to gender, age and environment*

Patients	Year	Gender	Age	Environement			
				Rural		Urban	
274	2018	Boys	6 – 12 years	5	**1,8%**	25	**9,1%**
			12-18 years	10	**3,7%**	67	**24,5%**
		Girls	6 - 12 years	11	**4%**	36	**13,1%**
			12-18 years	17	**6,2%**	103	**37,6%**
243	2018	Boys	6 – 12 years	7	**2,9%**	18	**7,4%**
			12-18 years	14	**5,8%**	54	**22,2%**
		Girls	6 - 12 years	8	**3,3%**	33	**13,6%**
			12-18 years	11	**4,5%**	98	**40,3%**

The difference in the number of pacients consulted in 2018 and 2019 is not significant (31 more pacients in 2018) . Analyzing the data in table I, it can be concluded that in both years were presented for orthodontic consultation more girls than boys (a rate of 2:1), more children and teenagers from urban area than from the rural area (an average of 5:1) and more teens than chidren (a rate of 3:1).

The distribution of the studied groups in 2018 and 2019 according to dentition shows that patients with permanent dentition are more than those with mixed dentition, respectively 80% with permanent dentition in 2018 and 75,3 % with permanent dentition in 2019 (a rate of 3:1). (figure 1).

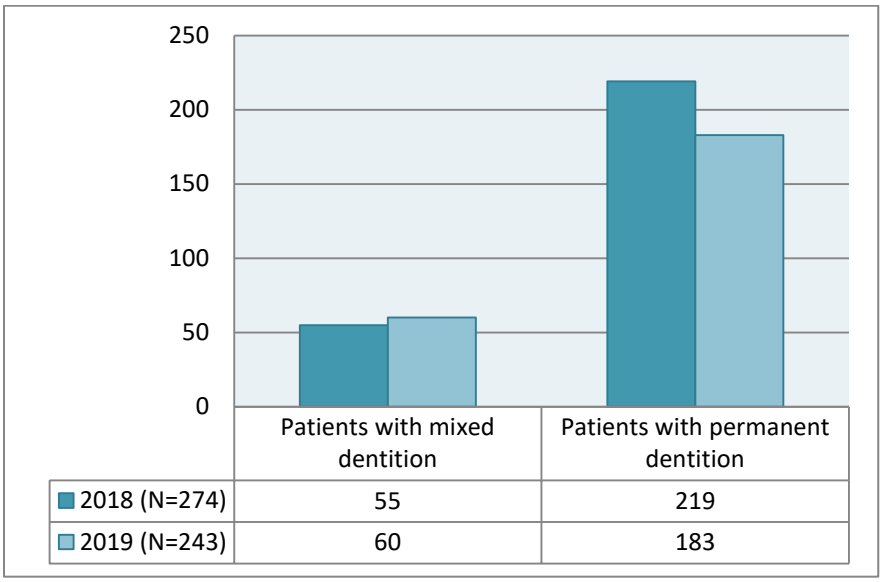


Figure 1. Distribution of the studied group in 2018 and 2019, according to dentition

In term of occlusal relations (according to the Angle classification) we reported in both years an increase number of young patients with neutral occlusal relations (class I Angle, characterized by neutral molar and cuspid relationships), respectively 71,2 % in 2018 and 61,3% in 2019, followed by a relatively equal number of dental anomalies with distalized occlusal relations (Angle class II): 21,9% in 2018 and 35,4% in 2019 and a small number of mesialized occlusal anomalies (class III) , respectively 3,33% in 2018 and 3,3% in 2019, the rate being 6:3:1 (figure 2).

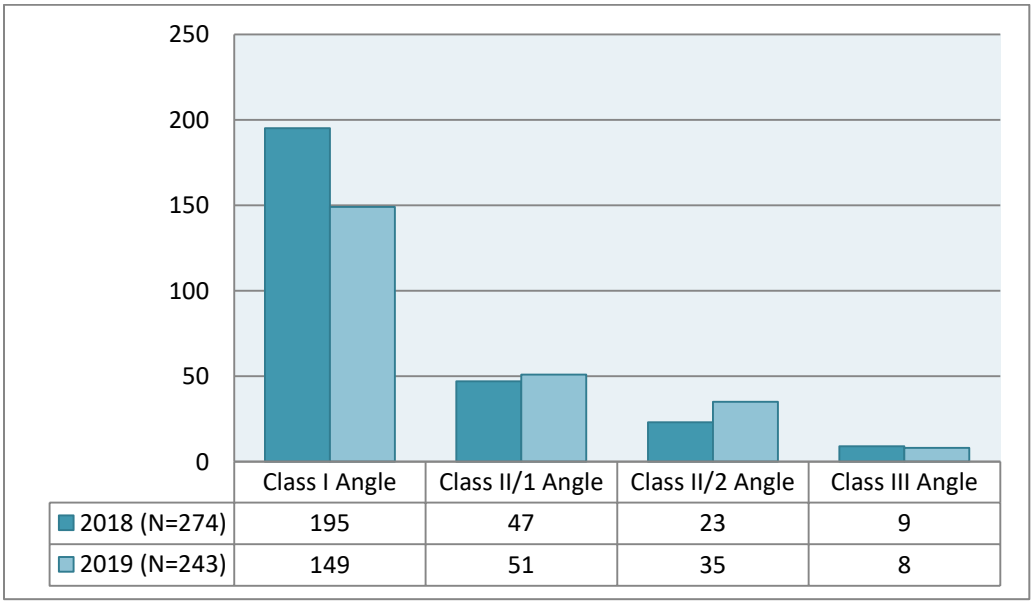
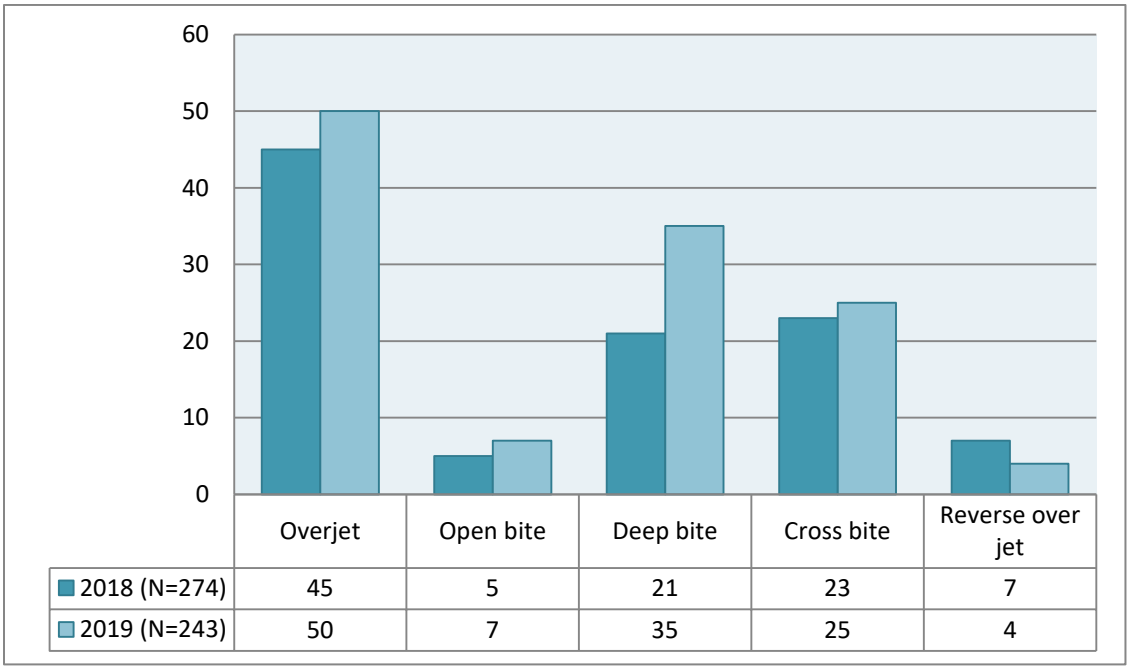


Figure 2. The distribution of the studied group in 2018 and 2019, according to occlusal relations (Angle classification)

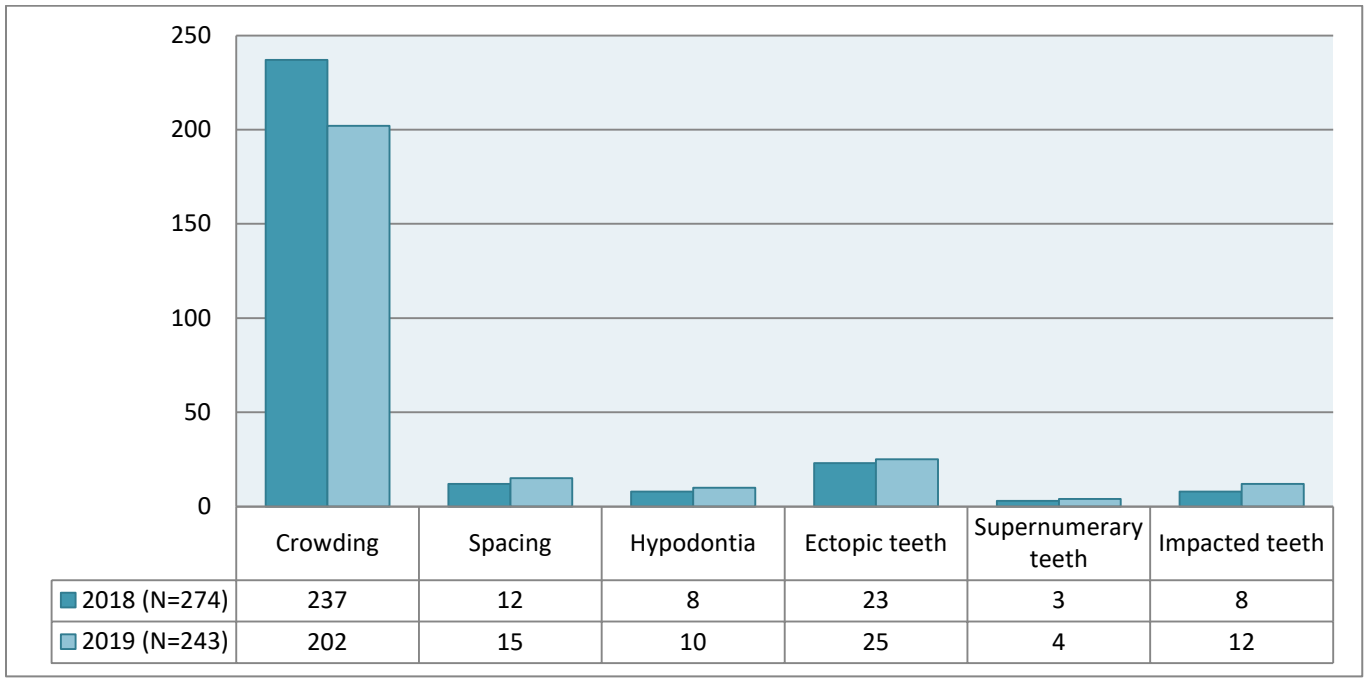
Regarding the maloclussions of the patients of the studied group in 2018 and 2019 it is observed that the patients with increased overjet (between 5-10 mm) (16,4% in 2018 and 20,6 % in 2019) are more those with deep bite (7,6% in 2018 and 12,7% in 2019) and cross bite (8,4% in 2018 and 10,3%) and the patiens with open bite (1,8% in 2018 and 2,9% in 2019) and reverese overjet (2,6% in 2018 and 1,6% in 2019) being in low number (figure 3)



	Overjet	Open bite	Deep bite	Cross bite	Reverse over jet
2018 (N=274)	45	5	21	23	7
2019 (N=243)	50	7	35	25	4

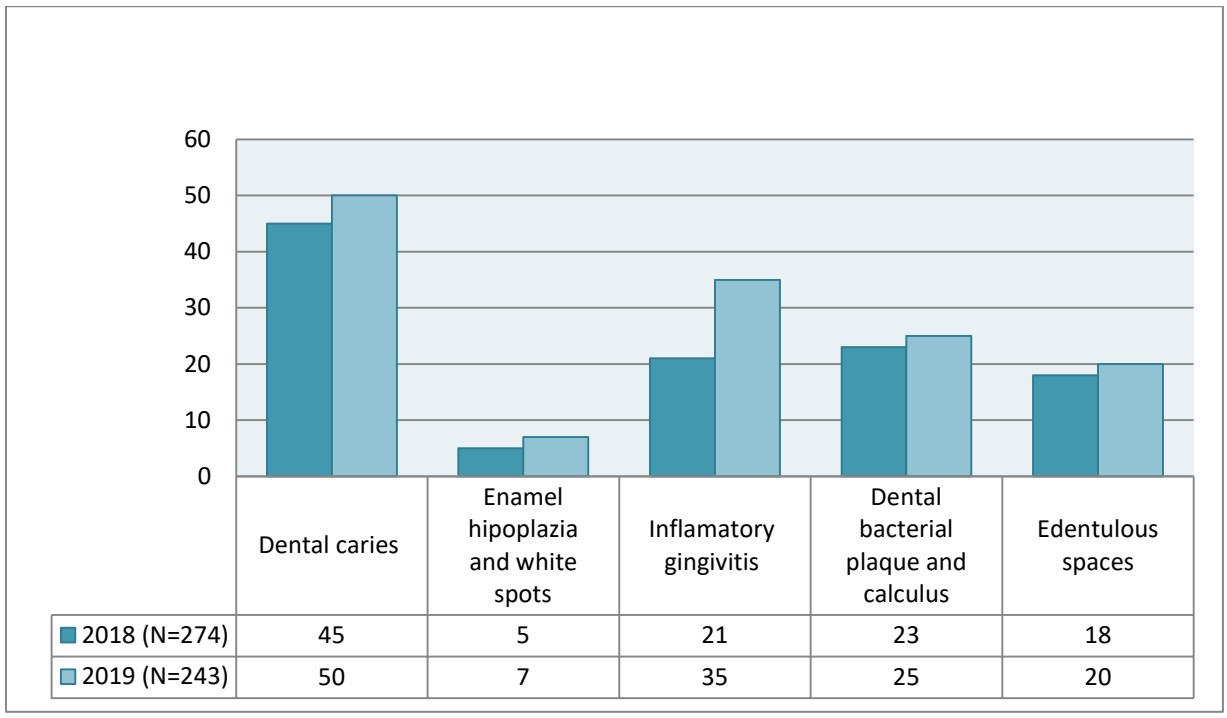
Figure 3. The distribution of the studied group in 2018 and 2019, according to malocclusions

The distribution of the patients of studied group in 2018 and 2019, according to associated dental abnormalities (incongruence and isolated) was : the highest number of dento-alveolar incongruity with crowding (86,5% in 2018 and 73,7% in 2019), followed by ectopic teeth (8,4% in 2018 and 10,3% in 2019) and dento-alveolar incongruity with spacing (4,4% in 2018 and 6,1%) . The young patients with hypodontia and impacted teeth were 2,9% in 2018 and 4,1% in 2019 and only 1% in 2018 and 1,6 % in 2019 presented with supernumerary teeth (figure 4).



	Crowding	Spacing	Hypodontia	Ectopic teeth	Supernumerary teeth	Impacted teeth
2018 (N=274)	237	12	8	23	3	8
2019 (N=243)	202	15	10	25	4	12

Figure 4 The distribution of the studied group in 2018 and 2019, according to associated dental abnormalities (incongruence and isolated)



	Dental caries	Enamel hipoplazia and white spots	Inflamatory gingivitis	Dental bacterial plaque and calculus	Edentulous spaces
2018 (N=274)	45	5	21	23	18
2019 (N=243)	50	7	35	25	20

Figure 5 The distribution of the studied group in 2018 and 2019, according to associated oro-dental pathologies

According to associated oro-dental pathologies observed at the first clinical examination, the patients with dental caries were 16,4% in 2018 and 20,6 % in 2019, the patients with dental bacterial plaque and calculus and inflamatory (due to a poor dental hygiene) were 8% in 2018 and 12,5% in 2019; the young patients with edentulous spaces were 6,6% in 2018 and 8,2% in 2019 and with enamel hypoplazia and white spots were 1,8% in 2018 and 2,9% in 2019 (figure 5).

At the first clinical examination we also analysed the presence of vicious (bad) habits that produced the malpositions of teeth and maloccusion, with the subsequent appearance of dento-alveolar anomalies. The vicious habits observed at an approximatey equal number of young patients in both year were, in descending order, the following : lower lip biting (sucking)-10,2% in 2018 and 10,3 % in 2019, nail biting- 8,8% in 2018 and 8,2% in 2019, finger sucking-5,1% in 2018 and 6,6% in 2019, mouth breathing-3,3% in 2018 and 2,9% in 2019, bruxism – 2,6% in 2018 and 3,7% in 2019 and tongue thrusting – 2,2% in 2018 and 1,6% in 2019 (table II).

Table II *Distribution of the studied group in 2018 and 2019, according to vicious habits*

Year	Mouth breathing	Tongue thrusting	Digital sucking	Lower lip biting(sucking)	Nail biting	Bruxism
2018 (N=274)	9	6	14	28	24	7
2019 (N=243)	7	4	16	25	20	9

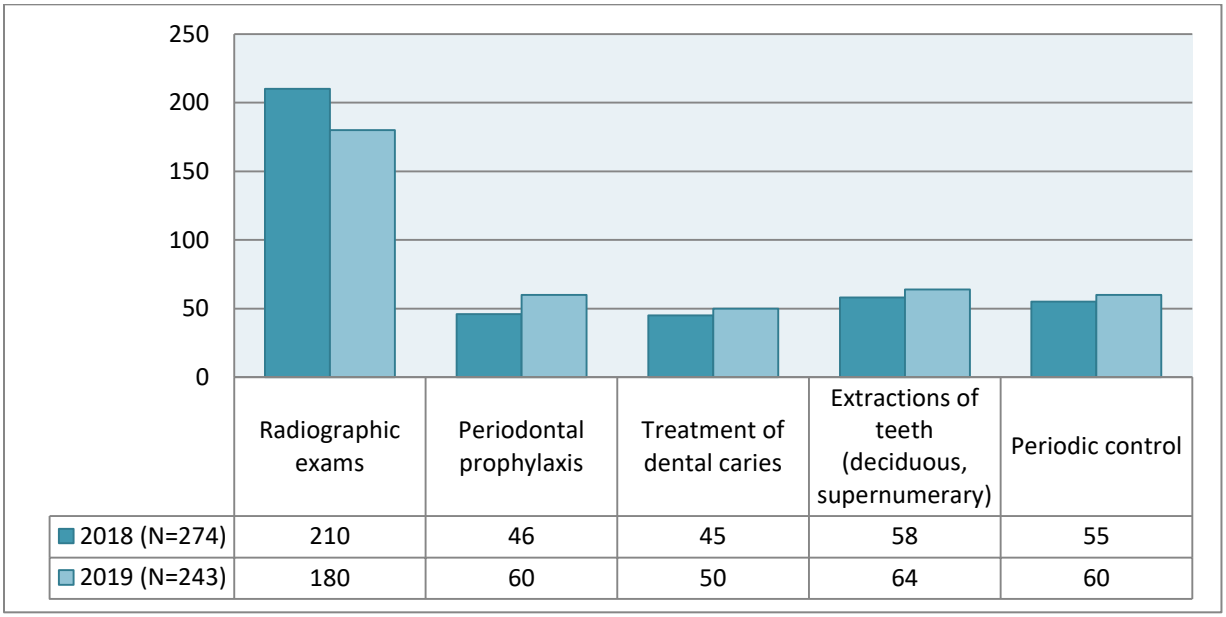


Figure 6 The distribution of the studied group in 2018 and 2019, according to recommendations given after first clinical examination

Figure 6 shows the distribution of the young patiens examinated in 2018 and 2019, regarding the recommendations given after first clinical examination and discussions:

-complementary radiographic exams (orthopantomograms, lateral cephalograms, CBCT) -76,6% in 2018 and 74% in 2019

-extractions of teeth -21,1% in 2018 and 26,3% in 2019

- periodic control (examination)-20% in 2018 and 25,7% in 2019

-treatment of dental caries and periodontal prophylaxis -16,1% in 2018 and 22,6% in 2019.

DISCUSSIONS

Analyzing the graphs presented above, we can notice the following :

- There are no significant differences between the child and teenagers groups studied in 2018 and 2019
- In 2018 and 2019 were examinated a larger number of girls aged 12-18 years from urban environement, with permanent dentition .
- The most patiens were occlusion class I Angle , prevailing dental crowding and increased overjet (in class II/1 Angle) due to thumb sucking or lower lip biting
- A large number of young patients had dental cavities and a poor dental hygiene
- After first orthodontic examination were recommended complementary radiographic exams, oral rehabilitation (treatment of dental caries, extractions of teeth, dental and periodontal prophylaxis0 and periodic control in young patients with mixed dentition.

The problem-based approach of discussing aspects of malocclusion should allow practising clinicians to develop their skills in the management and care of orthodontic patients, from initial assessment, through to the completion of treatment[28,29,30].

CONCLUSIONS

The specialty of orthodontics is taught predominantly as a field of endeavor dedicated to the improvement of orofacial esthetics and function. The goal of orthodontics is to correct or minimize deviations from accepted normal characteristics of dental occlusion, orofacial function, and esthetics.

The results of this study suggest further investigation regarding the perpection of young patients and their parents' of malocclusion beuing important in determining orthodontic treatment demand, motivation, and a good and proper cooperation. If in the case of children the parents were the ones worried about the eruption of the permanent teeth (especially for the alignment of the incisors), the teenagers were those who requested the correction of crowded and misaligned teeth, for a good smile and dental aesthetics, to increase self-confidence and self-esteem and for integration and acceptance in age-specific social groups.

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