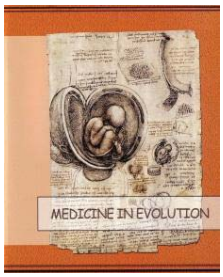
Orthodontic treatment in adult patients - a statistical study



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Abstract

Aims and objectives: The goal of this study was to establis the frequency of addressability of adults for orthodontic treatments, according to age, gender, environement, the reasons for requesting the consultations, clinical dental anomalies, dento-periodontal status and recommendations given after first clinical examination.

Material and methods: The study was performed on a group of 91 patients, the age between 19 and 52 years over a period of 2 years examined for orthodontic treatment in an dental office in Brăila county. The adults patients were selected from 608 subjects examinated in 2018 and 2019, atients being informed and accepting to participate in this study.

Results: Following the study performed on the adults specific group it was noticed that young females (age between 19-30 years), from urban areas, requested orthodontic treatment for dental aesthetic reason.

Conclusions: Adults subjects often requires an individualization of classical orthodontic treatment according to the existing and untreated malocclusion, dento-periodontal status and edentulous spaces.

Keywords: adult patients, clinical evaluation, orthodontic treatment

INTRODUCTION

The existence of malocclusions developed in childhood and their neglect over the years for various reasons (ignorance, financial or fear), influences the dento-maxillary apparatus, both functionally and aesthetically1,2. With age, the adult subjects undergoes changes in the bone support and periodontal tissue, which is particularly aggravated by the loss of teeth, which requires an individualization of classical orthodontic treatment according to the existing malocclusion and its aggravation over the years3,4. The demand for orthodontic treatment has increased universally, particularly over the past two decades in our office, both among children and young people, but also adults. A desire to enhance an aesthetic smile and a good oral health is the underlying motivation for most patients who seek orthodontic treatment3,5,6

The orthodontic treatment of adults, which frequently presents general condition and compromised oral health, involves a wide interdisciplinary collaboration between specialists in orthodontics, periodontology, prosthetics, implantology, oral and maxillofacial surgery7,8. Most adult patients who request an orthodontic evaluation are those patients who neglected malocclusions in childhood and did not benefit from orthodontic treatment or received ineffective or untimely discontinued orthodontic treatment. Some adults are sent by their general dentist for complex oral rehabilitation in interdisciplinary teams that include orthodontists, because the harmful consequences of periodontal diseases, edentations, parafunctions 5,9,10. The orthodontic treatment may have significant psychosocial benefits and can often lead to improved oral health-related quality of life most often involving teamwork for results that are as stable as possible over time11,12.

Aim and objectives

The motivation for choosing this topic derives from the desire for research and documentation related to the orthodontic treatment of adults, which differentiates it from that applied to children. The goal of this study was to establish the frequency of addressability of adults for orthodontic treatments, according to age, gender, environement, the reasons of orthodontic examination, clinical dental anomalies and dento-periodontal status and recommendations given after first clinical examination.

MATERIAL AND METHODS

The study was performed on a group of 91 patients, the age between 19-52 years over a period of 2 years examined for orthodontic treatment in a dental office in Brăila. The adults subjects were selected from 608 patients examinated in 2018 and 2019, patients being informed and accepting to participate in the study.

In 2018 were consulted 310 subjects, including 274 with age between 6-18 years and 36 with age between 19-52 years; in 2019 were examinated 298 patients of which 243 aged 6-18 years and 55 adults aged between 19-52 years.

RESULTS

A first analysis shows the distribution of the adults groups in 2018 and 2019 according to gender, age (three age groups: 19-30 years, 31-40 years and 41-52 years) and environment areas (rural and urban) (table I).

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

Patients	Year	Gender	Age	Environment	
				Rural	Urban
36	2018	Male	19- 30 years	2	4
			31- 40 years	1	2
			41- 52 years	0	1
		Female	19- 30 years	4	10
			31- 40 years	2	8
			41- 52 years	1	1
55	2019	Male	19- 30 years	2	6
			31- 40 years	1	4
			41- 52 years	1	2
		Female	19- 30 years	4	17
			31- 40 years	1	11
			41- 52 years	1	5

The difference in the number of adult subjects consulted in 2018 and 2019 was not significant (22 more in 2019). Analyzing the data in table I, it can be concluded that in both years were presented for orthodontic consultation more female than male (a rate of 2:1), (fig.1), more adults from urban area than from the rural area (an average of 3:1) and more young adults aged between 19-30 years.

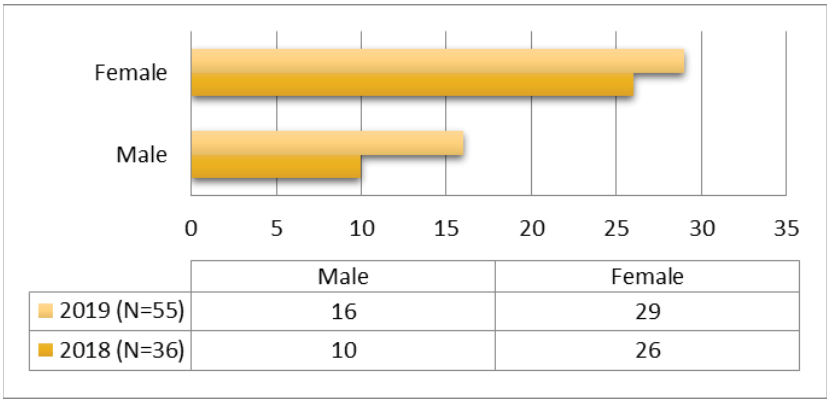
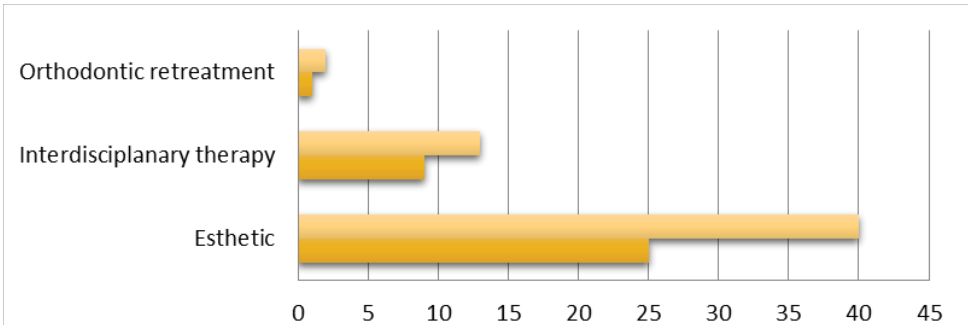


Figure 1. Distribution of the studied group in 2018 and 2019, according to gender

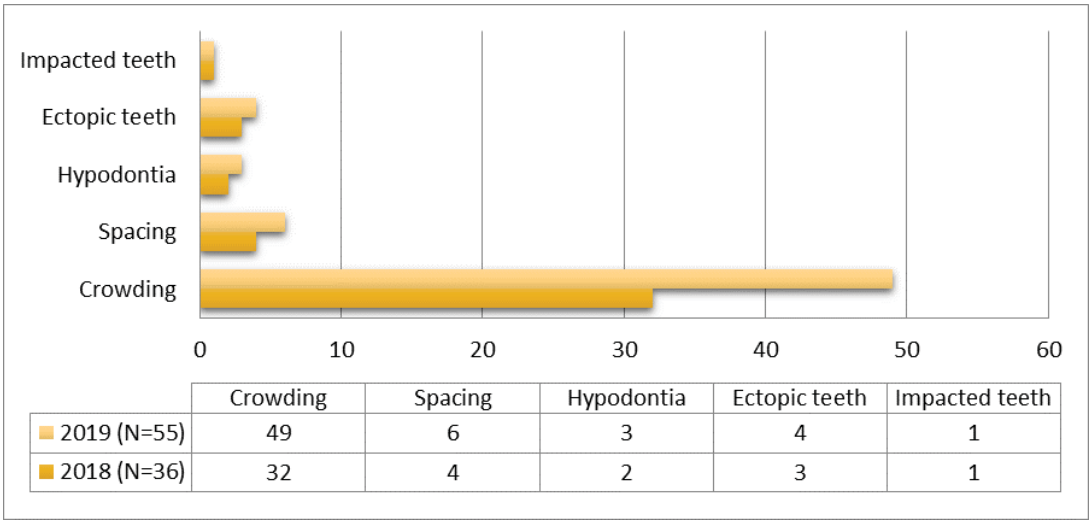
The reasons of orthodontic examination were esthetic, as part of interdisciplinary treatment and for orthodontic relapse (fig.2). The main reason of orthodontic examination was aesthetic, caused by dental crowding, malocclusion, ectopic teeth or anodontia. These patients requested orthodontic treatment without being sent by another doctor. Regarding the interdisciplinary treatment, the patients were reffered for consultation and orthodontic treatment by general dentist, periodontist or prosthetic specialist for correction of malocclusions caused by dental migrations, egressions or periodontal disease.



	Esthetic	Interdisciplanary therapy	Orthodontic retreatment
2019 (N=55)	40	13	2
2018 (N=36)	25	9	1

Figure 2. Distribution of the studied group in 2018 and 2019, according to reasons of orthodontic examination

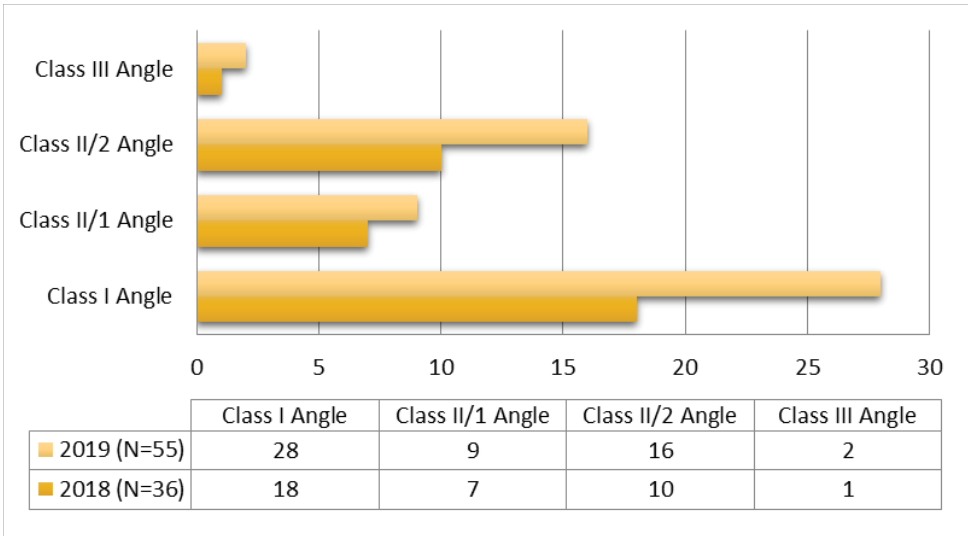
The distribution of the patients of studied group in 2018 and 2019, according to associated dental abnormalities (incongruence and isolated) was : the highest number of dento-alveolar incongruity with crowding, followed by ectopic teeth and dento-alveolar incongruity with spacing. At the first clinical orthodontic examination we noticed a increased number of adults with dental crowding associated with isolated dental anomalies (anodontia of lateral maxillary incisor or second mandibular premolar, impacted teeth or ectopic teeth) (fig.3).



	Crowding	Spacing	Hypodontia	Ectopic teeth	Impacted teeth
2019 (N=55)	49	6	3	4	1
2018 (N=36)	32	4	2	3	1

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

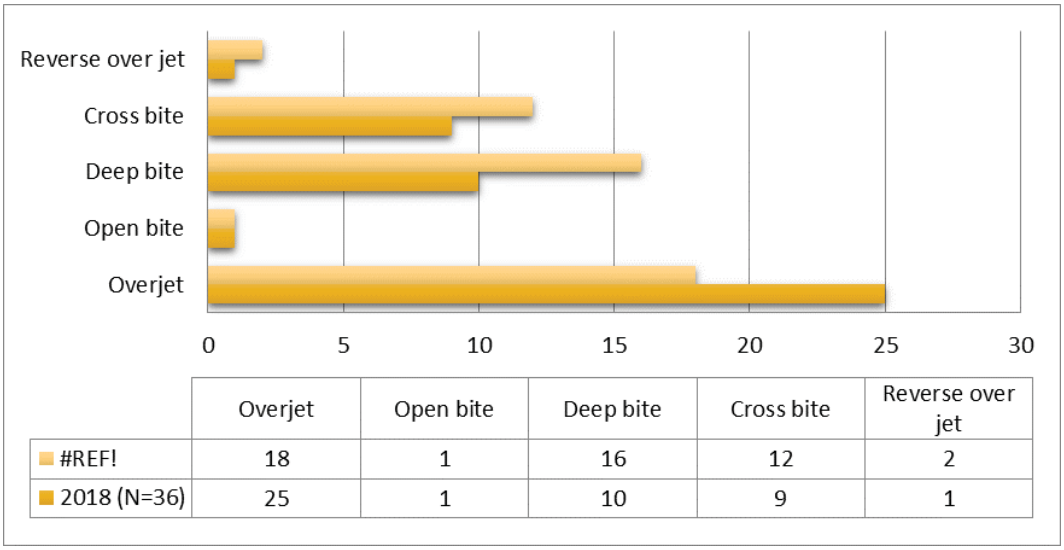
In term of occlusal relations (according to the Angle classification) we reported in both years an increase number of adult patients with neutral occlusal relations (class I Angle, characterized by neutral molar and cuspid relationships), followed by a relatively equal number of dental anomalies with distalized occlusal relations (Angle class II) and a small number of mesialized occlusal anomalies (class III) (figure 4).



	Class I Angle	Class II/1 Angle	Class II/2 Angle	Class III Angle
2019 (N=55)	28	9	16	2
2018 (N=36)	18	7	10	1

Figure 4. The distribution of the studied group in 2018 and 2019, according to occlusal relations (Angle classification)

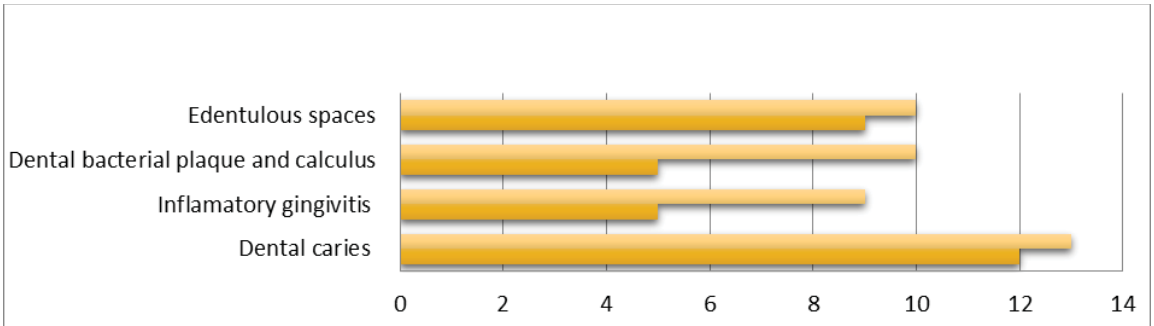
Regarding the maloclussions of the patients of the studied group in 2018 and 2019 it is observed that the adults with increased overjet (between 5-10 mm), with deep bite and with cross bite are significant more than adults with open bite and reverese overjet (figure 5).



	Overjet	Open bite	Deep bite	Cross bite	Reverse over jet
#REF!	18	1	16	12	2
2018 (N=36)	25	1	10	9	1

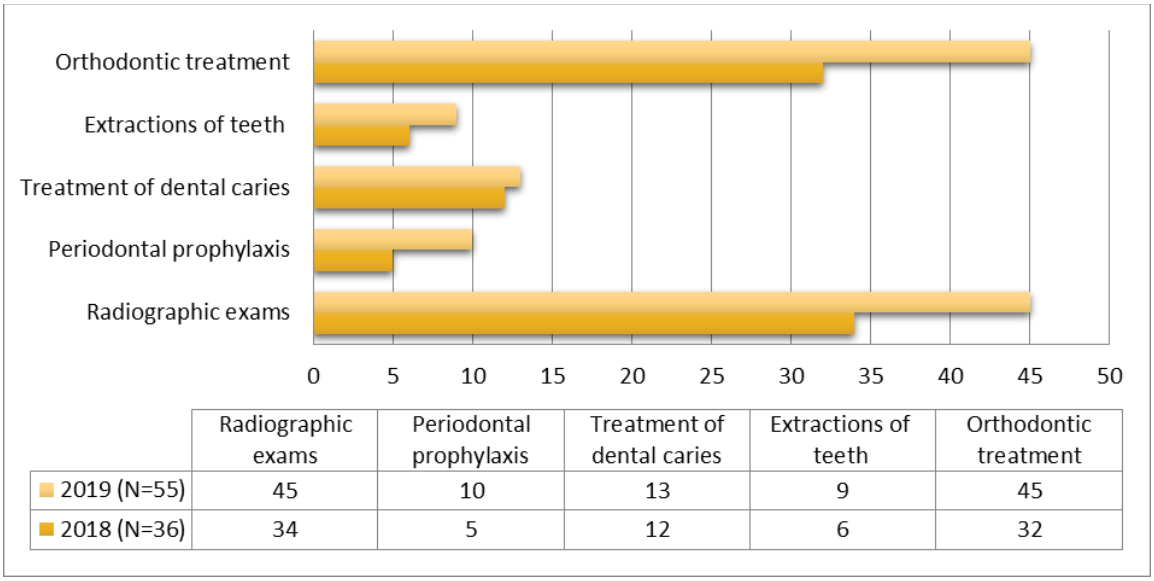
Figure 5. The distribution of the studied group in 2018 and 2019, according to malocclusions

According to associated oro-dental pathologies we observed at the first clinical examination, in both years, a relatively equal frequency of adults with untreated dental caries and edentulous spaces and with inflamatory gingivitis caused by dental bacterial plaque and calculus (figure 6).



	Dental caries	Inflamatory gingivitis	Dental bacterial plaque and calculus	Edentulous spaces
2019 (N=55)	13	9	10	10
2018 (N=36)	12	5	5	9

Figure 6. The distribution of the studied group in 2018 and 2019, according to associated oro-dental pathologies



	Radiographic exams	Periodontal prophylaxis	Treatment of dental caries	Extractions of teeth	Orthodontic treatment
2019 (N=55)	45	10	13	9	45
2018 (N=36)	34	5	12	6	32

Figure 7. The distribution of the studied group in 2018 and 2019, according to recommendations given after first clinical examination

Figure 7 shows the distribution of adult subjects examinated in 2018 and 2019, regarding the recommendations given after first clinical examination and discussions: complementary radiographic exams (orthopantomograms, lateral cephalograms, CBCT), extractions of teeth, treatment of dental caries and periodontal prophylaxis and orthodontic treatment.

DISCUSSIONS

Following the study performed on the adult patients groups, it was observed that one of the most invoked reason by adult patients who requested specialized orthodontic treatment, was aesthetic, caused by dental crowding, malocclusion, ectopic teeth or anodontia. In both years (2018 and 2019) were presented for orthodontic consultation more female than male, more adults from urban area than from the rural area and more young adults aged between 19-30 years, due to the tendencies of today's society to have a harmonious smile. More adult patients requested orthodontic treatment without being sent by another doctor and others were reffered for consultation and orthodontic treatment by

general dentist, periodontist or prosthetic specialist for correction of malocclusions caused by dental migrations, egressions or periodontal disease.

At the first clinical evaluation we could conclude that the most common abnormalities encountered were part of class I Angle occlusion, with dental crowding, anodontia and ectopic teeth, with increased over-jet, followed by class II Angle, with deep-bite and lateral cross-bite. According to associated oro-dental pathologies we also noticed, in both years, a relatively equal frequency of adults with untreated dental caries and edentulous spaces and with inflamatory gingivitis caused by dental bacterial plaque and calculus. Both for orthodontic treatment and for oral rehalilitation were recommended complementary radiographic exams, treatment of dental caries and periodontal prophylaxis and extractions of teeth.

CONCLUSIONS

The orthodontic treatments correct or minimize deviations from accepted normal characteristics of dental occlusion, orofacial function, and esthetics. More young adults seek orthodontic treatment for dental esthetic problem solving, as a consequence of untreated or neglected malocclusions in childhood, or an orthodontic iatrogeny. There are often situations in which adult patients need treatment for complex oral rehabilitation, including tooth extraction, treatment of periodontal disease, orthodontic or prosthetic treatment. The choice of treatment planning must take into account the good cooperation and consent of the adult patient, the opportunity to achieve and improve aesthetics and the maxillary functions and stability of the final result without affecting the periodontal status.

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