THE STATISTICAL STUDY OF MALOCCLUSIONS

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Abstract: The aim of this study is to achieve a statistical evaluation on a consignment of patients who have addressed the Dental ambulatory for children (Iaşi) for orthodontic consulting over a period of 10 years (1990 – 2000). The study has been performed on 375 patients (157 boys and 218 girls) aged between 4-24 years, with malocclusions. The diagnosis was established by clinical and paraclinical exams (cast and radiological measurements). Both removable and fixed appliances were used in conducting the treatment. The data base was created with MS Excel and the statistical evaluation was completed with the SPSS-15 and the EPI-Info-15 software, using descriptive statistics, bivalent correlations and linear regression. The Patients in need of orthodontic treatment presented malocclusion Class I 63,2%, Class II 28,3%, and Class III 5,8%. The group and isolated malocclusion proportion varied on the basis of the clinical manifestations asociated to the malocclusion Class. Based on age, the patients were applied with prophylactic treatment 3%, interceptive treatment 5% and curative 92%. The Pearson corelations made on the consigment of patients prooved the existence of a directly proportional link between the therapeutical results, the diagnosis of the malocclusions and the treatment chosen to be carried out. The Fisher test applied on the ortodontic treatment, the diagnosis Class and the therapeutical results proved to be significant in the statistics. The results of the prevalence maloclusion types are comparable with the ones from the speciality literature. The corelations that were carried out were based on medical reasoning. The regression model of prediction is probabilistic.

Key words: malocclusion, prevalence, correlations.

INTRODUCTION

The nowadays dental-facial orthodontics and orthopedics are increasingly becoming an important health service, which sets out and maintains one's physical and psychiatric balance. This service practices preventive procedures which anticipate the malocclusion's evolution, or interceptive procedures which remove or reduce the malocclusion's severity and corrective procedures for the malocclusion's treatment.

MATERIAL and METHOD

The aim of this study is to achieve a statistical evaluation on a consignment of patients who have addressed the Dental ambulatory for children (Iaşi) for orthodontic consulting over a period of 10 years (1990 – 2000). The study has been performed on 375 patients (157 boys and 218 girls) aged between 5-24 years, with malocclusions (Figure 1).

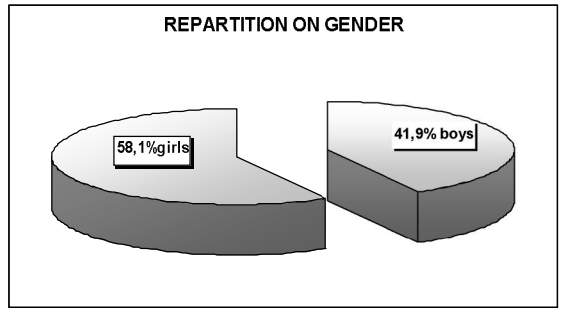

Figure 1

The patients came from the urban environment in a proportion of 85,6% and from the rural environment in a proportion of 14,4%. Amongst these patients 71,7% live in Iaşi and 28,3% in other countys.

The diagnosis was established by clinical and paraclinical exams (cast and radiological measurements). Both removable and fixed appliances were used in conducting the treatment.

The data base was created using MS Excel and the statistical evaluation was completed with the SPSS and the EPI-Info-15 software. Descriptive statistics, bivariate correlations and linear regression were carried out based on medical reasoning.

RESULTS

The patients in need of orthodontic treatment presented malocclusion Class I 63,2%, Class II 28,3% and class III 5,8%. From the overall malocclusions, 2,7% were transitory malocclusions, which have set in place once the teeth grew(Figure 2).

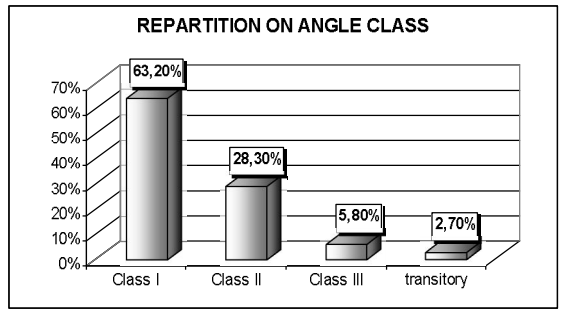

Figure 2

The group and the isolated malocclusion proportion varied on the basis of the clinical manifestations asociated to the malocclusion class. The prevalence of the isolated dental malocclusions was: malocclusion of number 6,9%, of shape 1,3%, of volume 8,8%, of position 79,5%, of premises 14,6% and of structure 43,2% (Figure 3).

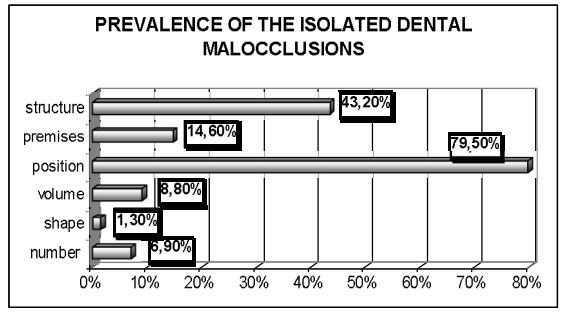

Figure 3

The prevalence of group malocclusion was: interincisive space 5,6% and dental crowding 94,4% (Figure 4).

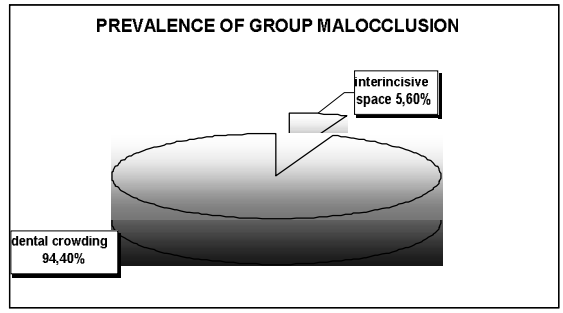

Figure 4

The cause of the malocclusion was determined by general factors 18,7%, disfunctional 28,5% and local 52,8% (Figure 5).

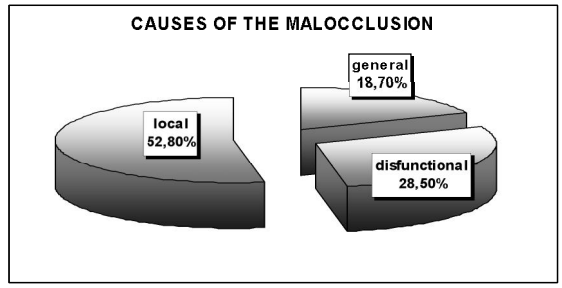

Figure 5

The patients were applied with profilactic treatment 3,2%, interceptive 5,9% and corrective 90,9% based on age (Figure 6).

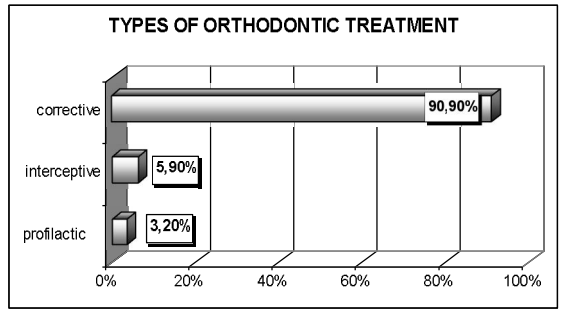

Figure 6

The therapeutical results varried on the pacients' acceptance, finishing or abandoning of the orthodontic treatment: treatment not carried out 39%, abandoned treatment 36%, finished 22%, refused treatment 2% and contraindicated treatment 1% (Figure 7).

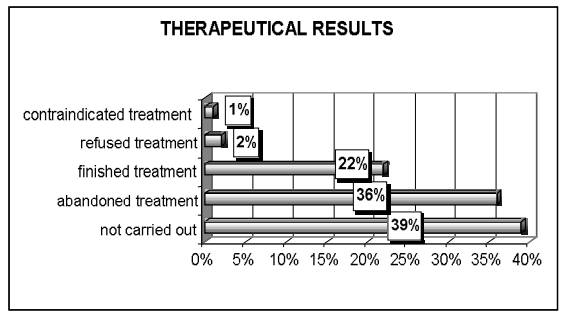

Figure 7

The Pearson correlations made on the consigment of patients proved the existence of a directly proportional link between the therapeutical results and the diagnosis of the malocclusions, significant with the value p=0.01 (Table I).

Table I. Pearson Correlation

Correlations		Class Angle	Results
Class Angle	Pearson Correlation	1	.311(**)
	Sig. (2-tailed)		.000
	N	375	375
Results	Pearson Correlation	.311(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

There was also a directly proportional link between the therapeutical results and types of treatment used, signficant with the value p=0,01 (Table II).

Table II. Pearson Correlation

Correlations		Types of treatment	Results
Types of treatment	Pearson Correlation	1	.269(**)
	Sig. (2-tailed)		.000
	N	375	375
Results	Pearson Correlation	.269(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

The Pearson corelations made on the consigment of patients proved the existence of a directly proportional link between the type of appliance and the therapeutical results, significant with the value p=0.01 (Table III).

Table III. Pearson Correlation

Correlations		Results	Type of appliance
Results	Pearson Correlation	1	.276(**)
	Sig. (2-tailed)		.000
	N	375	375
Type of appliance	Pearson Correlation	.276(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

There was also a directly proportional link between the surgical-orthodontic treatment that was carried out and the therapeutical results, signficant with the value p=0,05 (Table IV).

Table IV. Pearson Correlation

Correlations		Results	Surgical treatment
Results	Pearson Correlation	1	.102(*)
	Sig. (2-tailed)		.049
	N	375	375
Surgical treatment	Pearson Correlation	.102(*)	1
	Sig. (2-tailed)	.049	
	N	375	375

** Correlation is significant at the 0.05 level (2-tailed).

The calculated multiple regression model had as dependent variable the type of treatment that was carried out, and for independent variables, the diagnosis class and the therapeutical results. The Fisher test was statistical significant and the threshold was lower than 0,05 (Table V).

Table V. Coefficients of correlations

Model		Not standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	168.492	13.433		12.543	.000
	Class Angle	-3.610	5.795	-.032	-.623	.534
2	(Constant)	115.185	15.695		7.339	.000
	Class Angle	-14.361	5.836	-.128	-2.461	.014
	Results	33.892	5.722	.309	5.923	.000

Dependent Variable: Types of treatment

The standard grades histogram of the deviation did not have a normal curve, the distribution of the points overcame the diagonal. The low value of the dependent variable has the tendence to subestimate the reality (Figure 8).

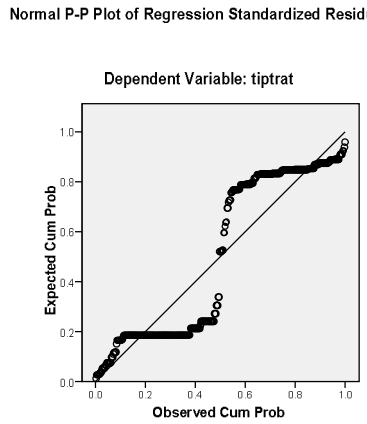

Figure 8

DISCUSSIONS

The malocclusions are capable of producing a series of functional, aesthetical and psychological imbalances. The malocclusions also can be the cause of poor dental hygiene, tooth decay, periodontal disease, traumatic occlusion and dental fracture. Disorders that come around in the case of a malocclusion can be aesthetic, masticator, of speech, dysfunction of temporo-mandibular joint and social integration.

The results of our study show a small prevalence for the skeletal malocclusions of Class II and Class III, which means that treatment planning are not difficult for orthodontics. However, the increased dental associated and group malocclusion prevalence imposes more steps for orthodontic treatment for achieving the therapeutic objectives.

The etiological factors for the malocclusions are in great proportion local, fact which proves that their removal

is easier than removing the dysfunctional and the general factors. The general factors require the cooperation with other disciplines of medicine and postpone some orthodontic treatment.

The finished results proportion is very small in comparison with our expectations. This situation is caused in mostly because of the low orthodontic sanitary education of the population which attend the health system of public orthodontics mainly because the primary orthodontics is sporadic applied in collectivities.

The calculus of the Pearson correlations and the linear regressions based on medical reasoning was carried out to verify if in the studied consignment of patients there was a link between the diagnosis of the malocclusions, the type of orthodontic treatment that was applied, the type of orthodontic apparatus that was applied and the obtained therapeutic results.

CONCLUSSIONS

The prevalence results of the malocclusions are comparable with the ones from the specialty literature, but they are specific to the geographic region.

The therapeutic results obtained refer to the population which attended the public orthodontic health service provided by the Home Health Insurance.

The accomplished correlations were carried out on the basis of medical reasoning and the regression model of prediction is probabilistic.

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