



## Comparison of the Levels of Diagnosing Orthodontic Anomalies of Dentistry Students

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### Abstract

**Objectives:** The diagnosis has an undoubtedly important role in the treatment of an anomaly. Correct treatments can only be provided with correct diagnoses. Our aim is to investigate the effects of dentistry orthodontics lessons, where orthodontic anomalies are basically taught for the first time, on diagnosis levels of students.

**Methods:** This study, which was conducted as a cross-sectional study, was conducted with a total of 206 dentistry students, 98 students (mean age:  $21.46 \pm 1$ ) who took orthodontics lessons and 108 students (mean age:  $19.31 \pm 1.15$ ) who did not take orthodontics lessons. The students were respectively presented with 7 different cases and they were asked whether these cases required treatment and the reason for the treatment if they needed one.

**Results:** The mean age of the group with orthodontics lessons was determined to be significantly higher ( $p=0.001$ ). The rate of students who answered correctly for all the cases was determined to be statistically significantly higher in the group who took orthodontics lessons ( $p=0.001$ ). In the comparisons of the diagnosis of those who provided correct answers for the cases in both groups, it was determined that the group who took orthodontics lessons were statistically significantly higher in making correct diagnoses ( $p=0.001$ ).

**Conclusions:** Orthodontics lessons are the only lessons that introduce orthodontic anomalies, teach them to students and ensure that dentists make correct decisions when they are alone in their clinics after graduation. Introducing and teaching orthodontics lessons and orthodontic anomalies with detailed cases will provide considerable contributions to future dentists in making correct diagnoses.

**Keywords:** Diagnosis; Orthodontics; Surveys; Students

### Introduction

Orthodontics is the department of dentists that treats and corrects disorders in teeth, in dental arches, in the relationship between teeth and jaws and in the relationship between jaws and skull [1,2]. The aim of orthodontics is not only correcting crowding teeth but also treating incompatibilities and irregularities that can occur in the formation of the skull and facial skeleton [3].

Defining a disease and revealing what it is by investigations is called diagnosis. The diagnosis has an undoubtedly important role in the treatment of an anomaly and correct treatments can only be

provided with correct diagnoses [4-7]. The existence of different methods in classification makes the diagnosis of anomalies difficult [8-11]. In this study, our aim is to investigate the effects of dentistry orthodontics lessons, where orthodontic anomalies are basically taught for the first time, on diagnosis levels of students.

Although there are many classifications for orthodontic anomalies, the most frequently used one today is the Angle classification [12]. According to this classification, the anomalies are classified as Class I, Class II and Class III in the sagittal plane [2,5,13-18]. Class II anomalies are classified into two as Division I

and Division II depending on the amount of increased overjet and overbite. In Angle’s classification, in the sagittal plane, the occlusion of the upper first molar’s mesio-buccal cusp with lower first molar’s buccal groove or the lower first molar’s mesial occlusion as much as the half of a premolar’s mesio-distal size compared to upper first molar is classified as Class I while the occlusion of the lower first molar, compared to upper first molar, more distally than the Class I relationship is classified as Class II. The occlusion of the lower first molar, compared to upper first molar, more mesially than the relationship in Class I is classified as Class III [2,5,13-18]. Although Angle’s classification is not sufficient for transversal and vertical anomalies, it maintains its popularity today due to repeatability, practicality and reliability [19].

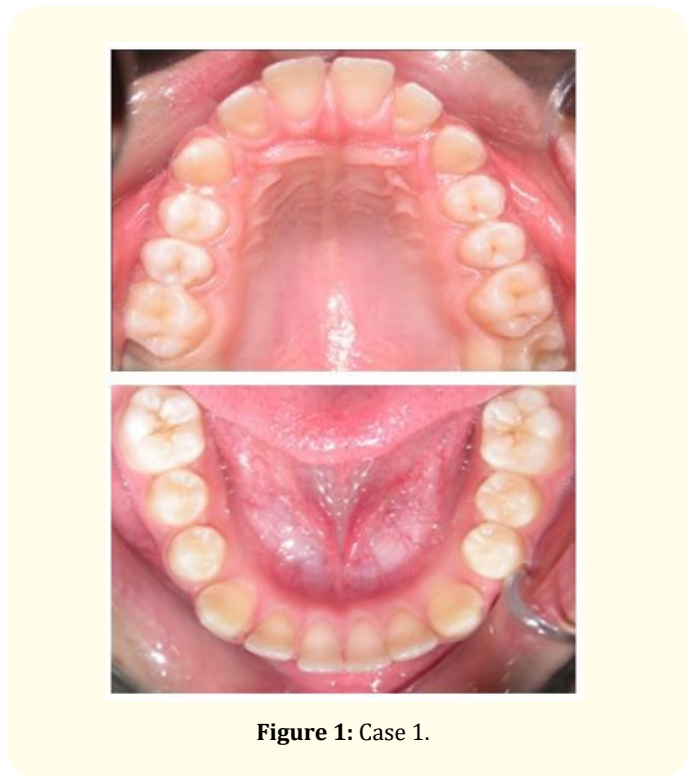
Before conducting orthodontic treatments, the diagnosis of the orthodontic anomaly is undoubtedly very important in determining the treatment and the appliances to be used. Dentists choose appliances to use according to their diagnoses [20]. Students learn what the concept of “Diagnosis” means and its importance while they are studying in the desks of dentistry. Orthodontic anomalies are taught with theoretical lessons and presented cases in orthodontics lessons. It was decided to conduct this study to investigate the efficacy of the lessons conducted. Our aim is to investigate how the dentistry orthodontics lessons, where orthodontic anomalies are basically taught for the first time, affect the level of students in diagnosing orthodontic anomalies.

**Materials and Methods**

In this study, the ethical principles stated in the Helsinki Declaration of the World Medical Association (WMA) have been adhered to. The Ethics Committee approval was obtained from the Firat University Non-Interventional Research Ethics Committee dated 06/12/2018 and numbered 02.

This study, which was conducted as a cross-sectional study, was conducted with a total of 206 dentistry students, 98 students (mean age: 21.46 ± 1) who took orthodontics lessons and 108 students (mean age: 19.31 ± 1.15) who did not take orthodontics lessons. The students were respectively presented with 7 different cases with Class I with diastema (Figure 1), Class I with crowding (Figure 2), Class I with anterior open bite (Figure 3), Class II Division I with diastema (Figure 4), Class II Division I with crowding (Figure 5), Class II Division II with diastema and collapsed bite (Figure 6)

and Class III with retrognathic maxilla and prognathic mandible (Figure 7) anomalies and they were asked whether these cases required treatment and the reason for the treatment if they needed one.



**Figure 1:** Case 1.



**Figure 2:** Case 2.



Figure 3: Case 3.



Figure 4: Case 4.



Figure 5: Case 5.



Figure 6: Case 6.



Figure 7: Case 7.

## Results

- The mean age of the group with orthodontics lessons was determined to be significantly higher ( $p=0.001$ ) (Table 1).
- The groups were determined to be balanced in terms of gender ( $p=0.648$ ) (Table 1).
- The rate of students who answered correctly for all the cases was determined to be statistically significantly higher in the group who took orthodontics lessons ( $p=0.001$ ) (Table 2).
- In the comparisons of the diagnosis of those who provided correct answers for the cases in both groups, it was determined that the group who took orthodontics lessons were statistically significantly higher in making correct diagnoses ( $p=0.001$ ) (Table 3).

Variable	Taking Orthodontics Lesson				P
	Those who take (n=97)		Those who do not take (n=108)		
Age	21,46 ± 1		19,31 ± 1,15		0,001
Gender	Count	%	Count	%	P
Male	48	49.5	50	46.3	0,648
Female	49	50.5	58	53.7	

Table 1: Age and Gender Distribution.

	Taking Orthodontics Lesson					P
	Those who take		Those who do not take		P	
	Count	%	Count	%		P
Case 1	Correct	85	87.6	70	64.8	0,001*
	Incorrect	12	12.4	38	35.2	
Case 2	Correct	88	90.7	72	66.7	0,001*
	Incorrect	9	9.3	36	33.3	
Case 3	Correct	96	99.0	54	50.0	0,001*
	Incorrect	1	1.0	54	50.0	
Case 4	Correct	92	94.8	41	38.0	0,001*
	Incorrect	5	5.2	67	62.0	
Case 5	Correct	82	84.5	36	33.3	0,001*
	Incorrect	15	15.5	72	66.7	
Case 6	Correct	94	96.9	64	59.3	0,001*
	Incorrect	3	3.1	44	40.7	
Case 7	Correct	97	100.0	71	65.7	0,001*
	Incorrect	0	0.0	37	34.3	

Table 2: Correct and Incorrect Diagnoses According to Cases.

Discussion

All of the cases were presented with intraoral views as frontal occlusion view, right and left profile occlusion views, occlusal upper jaw view and occlusal lower jaw view. Then, the students were asked to make decisions. In Case 1, only the figures taken from an occlusal point were presented and the other figures of the case were not presented. Contrarily, in Case 3, the occlusal figures were not presented and the other figures were presented. The aim of this is to determine the state of inability to diagnose due to the lack of figures although the presence of the anomaly is apparent

	Taking Orthodontics Lesson					P	
	Those who take		Those who do not take		P		
	Count	%	Count	%		P	
Case 1	No answer	12	12.4	38	35.2	0,001*	
	Diagnosis	Diastema	85	87.6	70		64.8
Case 2	No answer	9	9.3	36	33.3	0,001*	
	Diagnosis	Crowding	88	90.7	72		66.7
Case 3	No answer	1	1.0	54	50.0	0,001*	
	Diagnosis	Anterior Open-Bite	96	99.0	54		50.0
Case 4	No answer	5	5.2	67	62.0	0,001*	
	Diagnosis	Diastema	15	15.5	0		0.0
		Crowding	0	0.0	2		1.9
		Class II Occlusion	77	79.4	39		36.1
Case 5	No answer	14	14.4	72	66.7	0,001*	
	Diagnosis	Crowding	38	39.2	36		33.3
		Class II Occlusion	45	46.4	0		0.0
Case 6	No answer	3	3.1	44	40.7	0,001*	
	Diagnosis	Diastema	0	0.0	64		59.3
		Crowding	18	18.6	0		0.0
Case 7	No answer	0	0.0	38	35.2	0,001*	
	Diagnosis	Crowding	0	0.0	70		64.8
Surgery		97	100.0	0	0.0		

Table 3: Evaluation of Stated Reasons.

in the available figures. However, none of the students who replied with a necessity for treatment asked to see the other pictures and stated that they did not need to see the missing pictures.

While diagnosing anomalies, the radiological examination is of importance as well as clinic examination. However, because the 1<sup>st</sup>-grade and 2<sup>nd</sup>-grade students, who did not take orthodontics lessons, did not take radiology lessons and they do not even know how to interpret a panoramic x-ray, they were not presented with any radiograph. Because this group was not presented with any radiograph, the other group was not presented, too.



## Conclusion

The students who took orthodontics lessons made diagnoses based on the anomaly rather than the image while the students who did not take orthodontics lessons required treatment at a very low rate for cases with anomalies and prioritized the image rather than the anomaly. Orthodontics lessons are the only lessons that introduce orthodontic anomalies, teach them to students and ensure that dentists make correct decisions when they are alone in their clinics after graduation. Introducing and teaching orthodontics lessons and orthodontic anomalies with detailed cases will provide considerable contributions to future dentists in making correct diagnoses.

## Disclosure Statement

No conflict of interest was declared by the authors.

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