


# Anxiety Levels of Dental PhD and Specialty Program Students in Turkey About COVID-19 Pandemic Process

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## ABSTRACT

**Objective:** The aim of this study was to evaluate the anxiety levels about education, clinical practice and professional development of dental PhD and specialty program students in Turkey during pandemic process.

**Methods:** In this study, a scale consisting of two parts was developed by researchers and an online survey portal was used to reach the participants. The first part included personal information of participants. In the second part, there were 5-point scale items with three sub-dimensions to determine the anxiety levels about COVID-19. Item pool was constructed with 23 scale items. For the construct validity, exploratory factor analysis and confirmatory factor analysis was conducted. After the exploratory factor analysis, 3 items excluded from the scale and it resulted in three-factor structure. According to the theoretical background, factors were called as “clinical practice process”, “education process” and “professional development process”. When the items related to the sub-dimensions were examined, it was seen that education process includes 8 items, clinical practice process includes 9 items and professional process includes 3 items. Then, this three-factor structure with 20 items by the way one factor model based on these three subfactors were tested through confirmatory factor analysis and higher order confirmatory factor analysis. After exploratory factor analysis and confirmatory factor analysis, it was concluded that there was enough evidence for the construct validity. For the reliability study Cronbach alfa coefficients and corrected item-total correlations was calculated. It was observed that the Cronbach alpha coefficients for the education process sub-dimension, the clinical practice process sub-dimension and the professional development process sub-dimension were 0.87, 0.86 and 0.70, respectively. The stratified Cronbach alpha coefficient calculated for the overall scale was 0.90. It was referred that the scores obtained from the sub-dimensions of the scale and by the way for general score were reliable. For the corrected item-total correlations, education process sub-dimension was in the range of 0.559-0.661, clinical practice sub-dimension was in the range of 0.407-0.812, and professional development process sub-dimension was in the range of 0.487-0.534. It was concluded that all items were sufficiently distinctive and served its purpose. Moreover the data based on the scale were analyzed with t-test and Kruskal Wallis H test. With the statistically significant results of Kruskal Wallis H test, Mann-Whitney U test were conducted as post hoc.

**Results:** A total of 208 students (156 females, 52 males) participated. There was no significant difference among anxiety levels of the groups in terms of gender and department variables ( $p > 0.05$ ). However, there was statistically significant difference in terms of age and education year. The students with the ages in the interval of 22-24 had significantly lower anxiety levels regarding the clinical practice process ( $p < 0.05$ ). The anxiety levels of students with more than 4 years in education were significantly lower than other groups regarding education process ( $p < 0.05$ ). Younger students had lower anxiety levels about clinical practice process in PhD or specialty programs.

**Conclusion:** Increase of the year in education leads reduction in the anxiety level about education process.

**Keywords:** Covid-19, anxiety level, student, education process, clinical practice

## 1. INTRODUCTION

The coronavirus disease (COVID-19) outbreak that emerged in Wuhan, China in December 2019 has become a major public health problem for the global community. The World Health Organization (WHO) declared COVID-19 as a Public Health Emergency of International Importance on January 30, 2020 (1), and then declared a pandemic on March 11, 2020 (2).

COVID-19 may be asymptomatic for some patients or may cause symptoms ranging from various flu-like symptoms to pneumonia with a relatively high mortality rate (3). The disease is mainly transmitted by respiratory droplets and contact. Therefore, to be closeness of dentists to the oral cavity of patients, and to occur aerosols and droplets during majority of dental treatments increase the risk for dentists,

dental staff, and patients (4-6). Under these circumstances, dentists may be worried about infection during dental treatments.

WHO publishes reports that provide temporary guidance on the prevention, control and management of infections related to the pandemic and these guidelines are constantly updated. During the COVID-19 pandemic period, in parallel with the developed countries of the world, measures and emergency treatment application protocols for the control of cross infection risk between dentists and patients were determined in Turkey (6,7). Dental treatments, primarily emergency treatments, have been applied by considering these protocols and taking measures.

The education of PhD and specialty students in faculty of dentistry is both theoretical and practical process. The spreading of COVID-19 has led to the closure of institutions all over the world, and the education to be conducted on the internet. This situation has significantly affected the mission of practical education. At the same time, setback was observed in scientific studies conducted during PhD and specialty programs (8).

In the current literature, there is no comprehensive study about anxiety levels of PhD and specialty program students. The aim of this study was to evaluate the anxiety levels about education, clinical practice and professional development of dental PhD and specialty program students in Turkey during pandemic with developed scale by researchers.

## 2. METHODS

This study was conducted among PhD and specialty program students of dentistry in Turkey from January to February 2021. Ethical approval was received from the Ethics Committee of Gazi University (Ref No: 2020 – 731).

In this study, an online survey was structured into two main parts (Table 1). The questions in the first part were about demographic variables: gender, age, department and year in education of participants. In the second part, the Anxiety Scale of COVID-19 developed by the researchers was used. For the development of the scale, the eight-stage scale development process suggested by DeVellis was taken into consideration (9). Accordingly, a 5-point Likert-type item pool with 23 items was created for Anxiety in Pandemic Process. In order to determine the opinions of PhD and specialty program students on the items, a Likert type rating scale was used such as 5 = strongly agree, 4 = agree, 3 = partially agree, 2 = disagree, 1 = strongly disagree.

### 2.1. Statistical Analysis

The exploratory factor analysis (EFA) was conducted with Kaiser-Meyer-Olkin's (KMO) test to evaluate the suitability of the sample and KMO value was obtained as 0.853. KMO value greater than 0.6 indicates that the sample is suitable for factor analysis (10). In the exploratory factor analysis, the

value of 0.40 was taken as the lower limit of factor loadings of the items in the relevant factor, considering the sample size (11). Due to the insufficient loading of the items on the relevant factor and the cross-loading situation, analyzes were repeated after each item was removed. Besides the EFA, the proof of the construct validity was also provided with the confirmatory factor analysis (CFA) in terms of the suitability of the obtained structure. After the study of construct validity, a reliability study was conducted. Cronbach's alpha internal consistency coefficient and corrected item total correlations were examined for the reliability. The scale developed with three sub-dimensions would be also used as total score and accordingly the investigations were made through the total score and sub-dimensions. It was tested whether the group means for each variable differ statistically, taking into consideration the demographic variables of gender, age, department and education year. For comparisons, the independent samples t-test for the two-level gender variable and one-way ANOVA for age, department and education variables that have more than two levels were envisioned. In order to carry out parametric analysis, it was checked whether the assumptions of normality and homogeneity of variances were ensured. When examining the levels of the gender variable in the context of each sub-dimension and general score, it was observed that there were deviations from normality, but the assumptions of homogeneity of variances were provided. The mean comparisons for the gender variable were made using independent samples t-tests. When the variables of age, department and year of education which have more than two levels were examined, the analyzes were carried out with the Kruskal Wallis H test. Mann-Whitney U test was used as a post-hoc test.

## 3. RESULTS

A total of 208 PhD and specialty dental students (156 females, 52 males) from 8 departments were participated in the survey.

### 3.1. Exploratory factor analysis (EFA)

The analyses were carried out with the orthogonal rotation (varimax) technique using the principal factor axis method due to the fact that 3 sub-dimensions were envisaged according to theoretical studies in factor analysis. When the factor loadings obtained as a result of the rotation were examined, the 14th item, which was not loaded any dimension, and then the 17th item and the 21st item, which were overlapped, were removed one by one and the analyses were repeated, respectively. The scree plot of the results of EFA performed on the remaining 20 items is presented (Figure 1).

According to the scree plot graph it was observed that three factors have emerged from the first break point and it would be inferred that there is a three-factor structure. In addition to the scree-plot graph, explained variances for the factors with an eigenvalue above 1 obtained as a result of EFA based on 20 items are presented in the Table 2. It was seen that three factors with eigenvalues above 1 emerged.

Table 1. The survey form

**Cinsiyetiniz?**

Kadın  Erkek

**Yaşınız?**

22-24  25-27  28-30  31+

**Hangi bölümdesiniz?**

Ağız, diş, çene cerrahisi  Pedodonti

Ağız, diş, çene radyolojisi  Restoratif diş tedavisi

Endodonti  Periodontoloji

Ortodonti  Protetik diş tedavisi

**Doktora eğitim programınızın kaçınıcı yılındasınız?**

1  2  3  4  4+

1.Pandemi nedeniyle, uzmanlık ve doktora programlarının eğitim kalitelerinin olumsuz etkilenme ihtimali ile ilgili endişeleniyorum.

2.Pandemi nedeniyle tez çalışmamın ilerleyişinde olumsuzluk yaşanacağı düşüncesiyle kaygılanıyorum.

3.Pandemi sürecinde eğitimimde yıl kaybı yaşayacağımdan tedirgin oluyorum.

4.Pandemi sürecinde verilen eğitimlerde edindiğim bilgilerin kalıcı olmayacağını düşünüyorum.

5.Pandemi sürecinde eğitimimdeki aksaklıklar nedeniyle maddi kayıp yaşayacağım düşüncesi beni huzursuz ediyor.

6.Pandemi süreci sonrasında eğitimimle ilgili eksikliklerin telafi edilemeyeceğini düşünüyorum.

7.Pandemi sırasında aerosol oluşturacak diş tedavilerini yapmak ile ilgili tedirginlik duyuyorum.

8.Pandemi sürecinde gelinek noktada, üniversite kliniklerine geri dönerek hasta bakmak ile ilgili endişeleniyorum.

9.Covid-19 enfeksiyonu için aşı olmayan bir hastanın rutin diş hekimliği işlemlerini uygulamada olabildiğince hızlı davranırım.

10.COVID-19 için aşı olan bir hastada koruyucu önlemler alarak rutin diş hekimliği işlemlerini uygularken dahi pandemiden önceki gibi rahat davranmam.

11.Pandemi sürecinde hastalara uygun tedavi planlaması yapmak ile ilgili endişeleniyorum.

12.Bir hastadan Covid-19 bulaşma riski beni tedirgin ediyor.

13.İş arkadaşımından Covid-19 bulaşma riski beni tedirgin ediyor.

14.Dental tedavileri uygularken Covid-19 enfeksiyonunu aileme taşıyabileceğimden çok korkuyorum.

15.Bir hastanın rutin dental tedavi sırasında COVID-19'a yakalanma olasılığı ile ilgili rahatsızlık duyuyorum.

16.Dental tedavileri için kliniklere gelen hastaların Covid-19 enfeksiyonu ile ilgili farkındalıklarının yüksek olmaması ile ilgili endişeleniyorum.

17.Pandemi sürecinde yaptığım diş tedavilerinde hasta takibi yapamayacağımı düşünüyorum.

18.Pandemi süreci ve diş hekimlerinin içinde bulunduğu risk düzeyi göz önüne alındığında diş hekimliği mesleğinin geleceğini düşündüğümde kendini kötü hissediyorum.

19.Pandemi süreci sonrasında doktora/ uzmanlık eğitimimi tamamladığımda iş bulma konusunda endişeleniyorum.

20.Pandemi süreci ve diş hekimlerinin içinde bulunduğu risk düzeyi göz önüne alındığında mesleğimi değiştirme fikri kendimi kötü hissettiriyor.

21.Pandemi nedeniyle kongrelerin ve bilimsel toplantıların iptal edilmesi, ertelenmesi nedeniyle mesleki gelişiminin etkileneceği ile ilgili endişeleniyorum.

22.Pandemi sürecinde eğitimde görülen aksaklıklar nedeniyle mesleki özgüvenimin olumsuz etkileneceği düşüncesi bana huzursuzluk veriyor.

23.Pandemi nedeniyle bilimsel çalışmalarımın olumsuz etkileneceği ile ilgili tedirginlik duyuyorum.

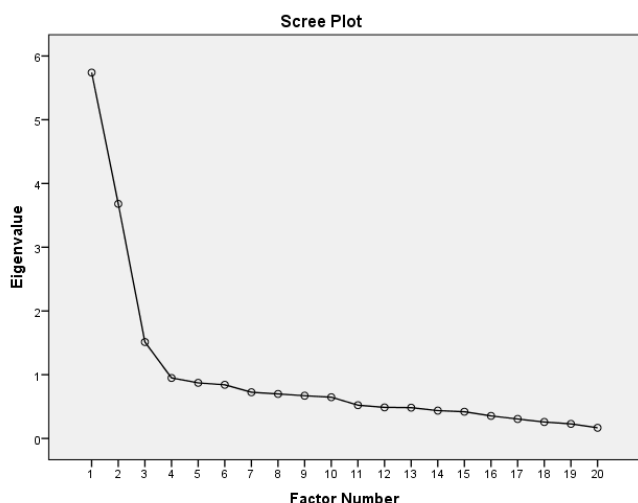


Figure 1. Scree Plot Graph of EFA

Table 2. Eigenvalue and explained variance ratios

	Eigenvalue	Explained variance ratio (%)	Total explained ratio (%)
1	5.740	20.190	20.190
2	3.680	18.291	38.481
3	1.513	8.517	46.998

Factor loadings matrix of the three-factor structure are presented in the Table 3. The factor loadings for Factor 1 were in the range of 0.427-0.876, for Factor 2 were in the range of 0.603-0.708 and for Factor 3 were in range of 0.593-0.635, and each item has sufficient factor loading on the relevant dimension. According to the theoretical background, Factor 1 was named as “clinical practice process”, Factor 2 was named as “education process” and Factor 3 was named as “professional development process”. When the items related to the dimensions are examined, it was seen that there were 8 items in the education process sub-dimension, 9 items in the clinical application process sub-dimension and 3 items in the professional development sub-dimension. The total explained variance was 46,998%. When the explained variance ratios of sub-dimension were examined, it was observed that the education process sub-dimension explained 18.291% of the variance, the clinical practice process sub-dimension explained 20.190% of the variance and the professional development process sub-dimension explained 8.517% of the variance. Accordingly, it was concluded that the ratio of explained variance were sufficient.

3.2 . Confirmatory Factor Analysis (CFA)

After the exploratory factor analysis, the structure of the developed scale was tested through the confirmatory factor analysis. CFA provides statistical evidence for a predetermined or constructed structure (12). CFA was applied to three sub-dimensional scale which were theoretically predetermined. The unweighted least squares method (ULS) was used in CFA

analysis. In order to provide evidence for the summability of scale scores, three sub-dimensional theoretical structures were tested with higher order CFA that three dimensions were associated to a single factor. Evaluations regarding the tested structure were carried out with t-values, standardized factor loadings and fit indices.

The significance of the observed variables was examined with the t-values obtained as a result of higher order CFA, and all items were above the critical value and were significant (13). In addition, a path diagram was obtained to examine the standardized factor loadings (Figure 2). The factor loadings of the items related to the education process sub-dimension were in the range of 0.54-0.77, the factor loadings of the items related to the clinical practice process were in the range of 0.45-0.88, and the factor loadings of the items related to the professional development sub-dimension were in the range of 0.57-0.76. It was referred that each item was loaded on the relevant dimension sufficiently. In addition to the factor loadings, some fit indices, which also provide information about model-data fit, were used. chi-square in the absolute fit category, RMSEA in the parsimony correction category, and the comparative fit index (CFI), normalized fit index (NFI), non-normalized fit index (NNFI), goodness of fit index. (GFI) and adjusted goodness of fit index (AGFI) in the comparative fit category were used. These indexes regarding the general fit of the scale are presented in the Table 4. It was seen that the value related to the section of the square’s degrees of freedom is less than 2. This value indicates perfect fit (14). When the RMSEA value was examined, it was observed that this value was 0.065 and was indicated good fit (15). CFI, NNFI, GFI and AGFI values were 0.95 and above which indicated perfect fit (16-17). On the other hand, NFI index was above 0.90 which indicated good fit (17). According to the fit indices in three different fit categories, it was concluded that the model fits the data, and the three-dimensional structure was verified.

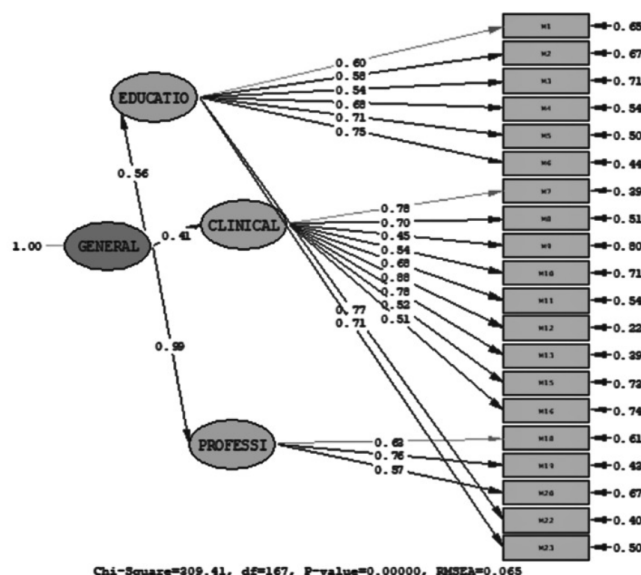


Figure 2. Path diagram

**Table 3:** Factor load values of the three-factor

		Factor		
		1	2	3
I1	I am concerned about that quality of education of PhD and specialty programs can be affected adversely due to pandemic.		.680	
I2	I worry that there will be negativity in progress of my thesis due to pandemic.		.708	
I3	I am worried that I will lose time in my education process due to pandemic.		.628	
I4	I think that the education I have acquired during pandemic will not be permanent.		.694	
I5	The thought that I will have financial loss due to educational problems during the pandemic disturbs me.		.603	
I6	I think that the deficiencies in my education cannot be compensated after pandemic.		.670	
I7	I worry about performing dental treatments included aerosol droplets during pandemic.	.768		
I8	At the point reached during pandemic, I am concerned about going back to university clinics and treating patients.	.727		
I9	I act as quickly as possible for routine dental treatments of a patient who is not vaccinated for COVID-19 infection.	.427		
I10	I cannot behave comfortably as before the pandemic, even when performing routine dental procedures by taking preventive measures in a patient vaccinated for COVID-19.	.561		
I11	I am worried about making suitable treatment planning for patients during the pandemic.	.572		
I12	The risk of Covid-19 transmission from a patient worries me.	.876		
I13	The risk of Covid-19 transmission from my colleague worries me.	.778		
I15	I am uncomfortable due to the possibility of transmission of COVID-19 to patient during routine dental treatment.	.561		
I16	I am concerned that patients who come to clinics for dental treatments do not have high awareness of Covid-19 infection.	.495		
I18	Considering the pandemic process and the level of risk dentists are in, I feel bad when I think about the future of the dentistry profession.			.593
I19	After the pandemic process, when I complete PhD/specialty education, I worry about finding a job.			.614
I20	Considering the pandemic process and the risk level of dentists are in, the idea of changing my profession makes me feel bad.			.635
I22	The thought that my professional self-esteem will be affected negatively due to the disruptions in education during the pandemic gives me uneasiness.		.638	
I23	I am worried that my scientific studies will be negatively affected by the pandemic.		.606	

**Table 4.** Fit indexes obtained as a result of CFA

Chi-squared	Sd	Chi-squared/sd	RMSEA	CFI	NFI	NNFI	GFI	AGFI
309.41	167	1.85	0.065	0.96	0.91	0.95	0.96	0.95

### 3.3. Reliability

In order to examine the reliability of the survey results, Cronbach alpha internal consistency coefficient was used. Due to the fact that scale consists of three sub-dimensions, the Cronbach alpha coefficient for each dimension was calculated, and then the reliability coefficient for the overall scale was calculated using the stratified Cronbach alpha formula (Table 5). It was observed that the Cronbach alpha coefficient for the education process sub-dimension of the scale was 0.87,

the Cronbach alpha coefficient for the clinical practice process sub-dimension was 0.86, and the Cronbach alpha coefficient for the professional development process sub-dimension was 0.70. The stratified Cronbach alpha coefficient calculated for the overall scale was 0.90. Considering the levels of the reliability coefficients, the professional development sub-dimension of the scale was considered to be medium, the coefficients related to the education process, clinical application process and overall scale were considered to be high (18). In this respect, it would be referred that the scores obtained from the sub-dimensions



of the scale and by the way for general score were reliable. In addition to the Cronbach's alpha reliability coefficients, the corrected item total correlations for each item on the basis of the relevant dimension were calculated and presented with the item numbers (Table 6). For corrected item-total correlations, education process sub-dimension was in the range of 0.559-0.661, clinical practice sub-dimension was in the range of 0.407-0.812, and professional development process sub-dimension was in the range of 0.487-0.534. Therefore, it was concluded that all items were sufficiently distinctive and served its purpose.

**Table 5.** Cronbach Alpha Coefficients regarding the sub-dimensions and the general of the scale

	Education process	Clinical practice process	Professional development process	General
Cronbach alfa	0.87	0.86	0.70	0.90

**Table 6.** Total correlations of corrected item

Dimensions	First For Item No	New Form Item No	Corrected Item – Total Correlation
Education process	I1	I1	,602
	I2	I2	,607
	I3	I3	,559
	I4	I4	,661
	I5	I5	,612
	I6	I6	,657
	I22	I19	,649
Clinical practice process	I23	I20	,607
	I7	I7	,728
	I8	I8	,668
	I9	I9	,407
	I10	I10	,528
	I11	I11	,567
	I12	I12	,812
	I13	I13	,719
Professional development process	I15	I14	,508
	I16	I15	,476
	I18	I16	,512
	I19	I17	,487
I20	I18	,534	

**3.4. Anxiety Levels of Students Depending on COVID-19 Pandemic**

Independent sample t test was used to determine whether the anxiety levels of all PhD and specialty program students in the study differed by gender according to the dimensions of the scale and the total score (Table 7). There was no significant difference between female and male participants in terms of anxiety levels about education process, professional development process, clinical practice process and in the general anxiety scores (p>0.05).

According to the age of participants, the anxiety levels about the education process, professional development process and

general anxiety scores did not show a statistically significant difference (p>0.05) (Table 8). However, it was observed that anxiety levels regarding the clinical practice process showed a statistically significant difference (p<0.05). When post-hoc tests were carried out, it was observed that the participants with the ages in the interval of 22-24 had lower anxiety levels compared to other groups.

**Table 7.** Independent sample t-test results comparing anxiety levels according to gender variable

	Gender	n	$\bar{x}$	ss	sd	t	p
Education process	F	156	28.76	6.48	206	.444	.658
	M	52	28.31	6.17			
Clinical practice process	F	156	35.74	5.89	206	1.251	.212
	M	52	34.50	7.09			
Professional development process	F	156	9.96	2.69	206	1.420	.157
	M	52	9.37	2.40			
General score	F	156	74.47	10.53	206	1.281	.201
	M	52	72.17	12.97			

**Table 8.** Kruskal Wallis H test results comparing anxiety levels according to age variable

	Age	n	$\bar{x}$	ss	Mean rank	sd	$\chi^2$	p
Education process	22-24	7	6.99	2.64	110.64	3	1.449	.694
	25-27	99	6.59	.66	109.09			
	28-30	73	6.67	.78	98.28			
	31+	29	4.78	.89	103.02			
Clinical practice process	22-24	7	4.86	1.84	38.07	3	9.976	.019
	25-27	99	5.77	.58	102.31			
	28-30	73	6.64	.78	110.58			
	31+	29	6.18	1.15	112.71			
Professional development process	22-24	7	2.51	.95	76.64	3	2.037	.565
	25-27	99	2.62	.26	107.49			
	28-30	73	2.69	.31	105.34			
	31+	29	2.57	.48	98.90			
General	22-24	7	13.35	5.04	70.57	3	2.438	.487
	25-27	99	10.75	1.08	105.23			
	28-30	73	11.76	1.38	104.80			
	31+	29	10.59	1.97	109.43			

In terms of the department variable, anxiety levels about the education process, clinical practice process, professional development process, and general anxiety scores did not show a statistically significant difference (p>0.05) (Table 9).

There was no significant difference among anxiety levels about clinical practice process, professional development process and general anxiety scores in terms of year in education of participants (p>0.05) (Table 10). However, it was observed that the anxiety levels of the participants with more than 4 years in education were significantly lower than other participants regarding education process (p <0.05).

**Table 9.** Kruskal Wallis H test results comparing anxiety levels according to department variable

	Department	n	$\bar{x}$	ss	Mean rank	sd	$\chi^2$	p
Education process	Oral and Maxillofacial surgery	18	30.83	7.47	129.28			
	Dento-Maxillofacial Radiology	16	27.69	7.21	95.84	7	5.741	.570
	Endodontics	26	27.73	5.94	92.25			
	Orthodontics	14	26.93	8.35	90.64			
	Pedodontics	10	29.10	4.93	105.05			
	Restorative Dentistry	16	28.56	7.73	106.97			
	Periodontology	28	29.71	4.47	112.41			
	Prosthodontics	80	28.54	6.26	103.73			
Clinical practice process	Oral and Maxillofacial surgery	18	33.17	6.73	83.64			
	Dento-Maxillofacial Radiology	16	34.13	4.84	86.56	7	13.72	.56
	Endodontics	26	34.69	6.62	96.58			
	Orthodontics	14	33.14	6.44	82.82			
	Pedodontics	10	35.20	3.58	96.70			
	Restorative Dentistry	16	36.00	6.70	110.66			
	Periodontology	28	33.75	8.21	95.34			
	Prosthodontics	80	37.35	5.09	122.10			
Professional development process	Oral and Maxillofacial surgery	18	9.44	2.97	101.36			
	Dento-Maxillofacial Radiology	16	9.00	2.42	87.50	7	7.947	.337
	Endodontics	26	9.31	2.31	91.71			
	Orthodontics	14	9.79	3.19	99.86			
	Pedodontics	10	10.40	2.72	117.55			
	Restorative Dentistry	16	9.75	2.74	105.34			
	Periodontology	28	9.29	2.77	90.50			
	Prosthodontics	80	10.35	2.48	116.68			
General	Oral and Maxillofacial surgery	18	73.44	13.02	106.03			
	Dento-Maxillofacial Radiology	16	70.81	11.35	85.66	7	8.457	.294
	Endodontics	26	71.73	12.73	91.81			
	Orthodontics	14	69.86	13.57	83.57			
	Pedodontics	10	74.70	8.67	103.75			
	Restorative Dentistry	16	74.31	13.63	107.88			
	Periodontology	28	72.75	10.91	98.13			
	Prosthodontics	80	76.24	9.45	117.36			

**Table 10.** Kruskal Wallis H test results comparing anxiety levels according to year in education variable

	Year in education	n	$\bar{x}$	ss	Mean rank	sd	$\chi^2$	p
Education process	1	42	30.69	6.14	124.55	4	13.820	.008
	2	62	28.63	6.28	103.34			
	3	74	28.88	5.91	105.62			
	4	20	26.55	6.91	88.05			
	4+	10	22.70	6.98	52.10			
Clinical practice process	1	42	34.45	6.22	93.35	4	7.030	.134
	2	62	35.87	6.66	109.45			
	3	74	36.09	5.11	108.86			
	4	20	35.80	7.65	115.65			
	4+	10	31.20	6.91	66.10			
Professional development process	1	42	9.79	2.34	105.12	4	6.715	.152
	2	62	10.03	2.64	108.58			
	3	74	10.08	2.56	109.68			
	4	20	9.05	3.33	92.70			
	4+	10	8.10	2.08	61.85			
General	1	42	74.93	11.07	109.45	4	8.923	.063
	2	62	74.53	10.91	105.66			
	3	74	75.05	9.26	108.86			
	4	20	71.40	14.91	101.55			
	4+	10	62.00	12.88	50.10			

#### 4. DISCUSSION

COVID-19 which has been spread rapidly on the worldwide since late December 2019 caused human mortality. Besides this result, it also negatively affects the social behaviors. The governments have taken serious measures about social areas, healthcare systems and economy for control and mitigation of pandemic (19). As a part of measures, the dental clinics were closed, or dental treatments were restricted for a while, since healthcare professionals are exposed to a high risk of being infected due to potential contact with infected patients (5). Especially the dentists work in close contact with patients and expose to aerosol and droplets splashing out of oral cavity of patients (5,6). Besides, the dentists have spreading potential of infection to their families, peers and other patients. WHO suggests that the priority is given to emergency dental treatments and the other dental treatments are deferred until a time when outbreak goes into recession (20).

The clinical practice, which is a part of dental education, is important for postgraduate students as well as undergraduate students in dentistry to gain experience and to make suitable treatment planning. In this study, the PhD and specialty students with the ages in the interval of 22-24 showed lower anxiety levels regarding the clinical practice process compared to other groups. It can be concluded that this group, who is at the beginning of the postgraduate education, wants to return to the clinics due to deficiency of clinical practice.

The dentistry faculties switched to online education like other educational institutions to ensure continuity of theoretical education. Although online education provides opportunity to learn anywhere and at any time, the interruption of education and problems related digital platforms may decrease motivation or may cause increase in anxiety tendency of students (6,21). In this study, the anxiety levels of the students with more than 4 years in education were significantly lower than other students regarding education process. It could be assumed that theoretical knowledge and clinical experience increase, and postgraduate students make progress in thesis and scientific researches with the increasing of year in education. Thus, the students with more than 4 years in education had lower anxiety levels about quality of education and losing time in education process.

Özdede et al (21) measured the anxiety levels of dental students and it was observed that the students were anxious about the COVID-19 pandemic. Also, there was no difference between gender and anxiety levels significantly. In the present study, it was demonstrated that the gender variable is not caused difference among anxiety levels about education process, professional development process, and clinical practice process. Similar results were observed for department variable as well. Additionally, the concerns about the future of the profession, finding a job or the thought of changing the profession due to COVID-19 were questioned, and no difference was found among the anxiety levels of the students.



Unfortunately, COVID-19 pandemic is a long period and destructive results of pandemic about education will be detected in the future. Therefore, new education models must be developed for PhD and specialty dental students such as video records including different case series and their treatments. Online seminars and congresses must be organized, and the students must be promoted to attend organizations. Even though online education and online seminars cannot compensate lack of clinical practice, self-esteem of dentists can be supported by increasing their theoretical knowledge and improving their perspectives.

## 5. CONCLUSION

For clinical practice process, the lowest anxiety levels were detected in students with the ages in the interval of 22-24. Regarding education process, students with more than 4 years in education have the lowest anxiety levels. The variables of gender and department did not lead statistically significant difference among anxiety levels of groups about education process, clinical practice process and professional development process.

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