



## Investigation of Preventive Measures Taken by Faculty of Dentistry Students in Clinical Practices and Perceived Stress Levels During the Pandemic Period<sup>#</sup>

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### Research Article

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### ABSTRACT

**Objectives:** This study aimed to examine the prevention measures applied by dentistry students in clinical conditions according to various variables and their perceived stress levels during the COVID-19 epidemic.

**Methods:** The study was performed on 4th and 5th -grade students studying at RTEU Faculty of Dentistry. In the research, the whole count method was used, and data were collected from 168 students through an online questionnaire. The questionnaire consisted of demographic information, questions about prevention measures taken in clinical practice, and perceived stress scale questions. Normality test (Shapiro-Wilk) was applied to the data and T-Test and Chi-Square Analysis were used for statistical analysis. Significance was determined as  $p < 0.05$ .

**Results:** The perceived stress levels of female students were found to be significantly higher than that of male students, and the perceived stress levels of 5th-grade students were significantly higher than that of 4th-grade students. The perceived stress levels of the students who used rubber dams were found to be significantly lower than the students who did not use rubber dams and the students who paid attention to social distance in the clinic compared to those who did not pay attention to social distance. Moreover, the perceived stress levels of students who knew which institution to contact with a suspected COVID-19 patient were found to be significantly lower than those who did not know.

**Conclusion:** It was determined that taking preventive measures in clinical practices was effective on students' perceived stress levels. Besides, it was observed that the perceived stress level of the students differed according to gender and grade level.

**Key Words:** COVID-19, Dentistry Students, Stres

## Pandemi Döneminde Diş Hekimliği Fakültesi Öğrencilerinin Klinik Uygulamalarda Aldıkları Korunma Önlemleri ve Algılanan Stres Düzeylerinin İncelenmesi<sup>#</sup>

#### Bilgi

#Bu çalışma 23-25 Kasım 2021 tarihleri arasında düzenlenen "Sivas Cumhuriyet Üniversitesi 1. Uluslararası Diş Hekimliği Kongresi"nde sözlü bildiri olarak sunulmuştur.

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### Öz

**Amaç:** Bu çalışmanın amacı COVID-19 salgını sırasında diş hekimliği öğrencilerinin çeşitli değişkenlere göre klinik şartlarda uyguladıkları korunma önlemlerinin ve algıladıkları stres düzeylerinin incelenmesidir.

**Gereç ve Yöntemler:** Çalışma RTEÜ Diş Hekimliği Fakültesinde öğrenim gören 4. ve 5. sınıf öğrencileri üzerinde gerçekleştirilmiştir. Araştırmada tam sayım yöntemine gidilmiş ve 168 öğrenciden çevrimiçi anket yoluyla veri toplanmıştır. Anket, demografik bilgiler, klinik uygulamalarda alınan korunma önlemleri ile ilgili sorular ve algılanan stres ölçeği sorularından oluşmuştur. Verilere normallik testi (Shapiro-Wilk) uygulanmış olup istatistiksel analizlerde T-Testi ve Ki-Kare Analizi kullanılmıştır. Anlamlılık,  $p < 0.05$  olarak belirlenmiştir.

**Bulgular:** Kadın öğrencilerin algılanan stres düzeyleri erkek öğrencilere göre; 5. sınıf öğrencilerinin algılanan stres düzeyleri, 4. sınıf öğrencilerine göre anlamlı bir şekilde yüksek bulunmuştur. Rubber dam kullanan öğrencilerin kullanmayan öğrencilere göre; klinikte sosyal mesafeye dikkat eden öğrencilerin sosyal mesafeye dikkat etmeyenlere göre; COVID-19 şüpheli hasta ile karşılaşmış hangi kurumla iletişime geçeceğini bilen öğrencilerin, bilmeyen öğrencilere göre algılanan stres düzeyleri anlamlı bir şekilde düşük bulunmuştur.

**Sonuçlar:** Klinik uygulamalarda korunma önlemleri alınmasının öğrencilerin algıladıkları stres düzeyleri üzerinde etkili olduğu belirlenmiştir. Ayrıca öğrencilerin algıladıkları stres düzeyinin cinsiyet ve sınıf düzeyine göre farklılaştığı görülmüştür.

**Anahtar Kelimeler:** COVID-19, Diş Hekimliği Öğrencileri, Stres.

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## Introduction

The COVID-19 pandemic period has caused students to experience some changes in their socio-cultural and psychosocial lives.<sup>1</sup> These changes can also affect important areas of students' lives such as academic performance and social life.<sup>2</sup> Students studying dentistry have continued their education processes with clinical applications as well as theoretical courses.<sup>3</sup> It is essential for the students (4th and 5<sup>th</sup>-grades) who are in the final stages of their education, to have high levels of knowledge and awareness about COVID-19 processes, especially in clinical practice, in terms of their health and public health.<sup>4</sup>

The high amount of aerosol generated during dental procedures due to proximity to the patient and operative instrumentation poses a serious risk for the spread of COVID-19 infection for dental students.<sup>5</sup> Dentistry students should know what extra protective measures to take during clinical practice to prevent transmission of COVID-19 infection.<sup>6</sup>

On the other hand, dentistry students who both try to protect themselves as individuals and work for the protection and treatment of patients had to adapt to these changes brought about by the epidemic. This has undoubtedly made the experiences of the students very valuable.<sup>7</sup>

Many negative situations experienced during the epidemic process may cause students to perceive the events as more stressful, so it can be expected that the epidemic will create some effects on the performance of the students.<sup>8</sup> In the literature review, it has been seen that many studies have been conducted on the stress levels of students or dentists during the COVID-19 pandemic process.<sup>3,9,10,11</sup> However, no study has been found in the literature that determines the protection measures taken by dental students in clinical practice and their perceived stress levels. In this context, it is thought that this study will contribute to the literature by examining the stress levels of students working in clinical practices in dentistry during the COVID-19 pandemic process.

Based on all these points of view, this study mainly aimed to determine the precautions taken by the 4th and 5th-grade students of dentistry faculty in clinical practice and their perceived stress levels. The sub-objectives of the research are to reveal the stress levels of the students according to the measures they take in clinical practices, and to determine whether some variables make a difference in the measures taken in clinical practices and perceived stress levels.

## Materials and Methods

All procedures conducted were approved by the Ethical Committee of Recep Tayyip Erdoğan University (No. 2021/209).

The quantitative research method was used in the study. The research was designed following the cross-sectional approach. The population of the research consisted of 173 students studying in the 4th and 5<sup>th</sup>-

grades of the RTEU Faculty of Dentistry. Çoşkun *et al.*<sup>12</sup> stated that sample sizes larger than 30 and smaller than 500 were sufficient for many studies. The sampling method was not preferred in the study and data were collected from the students voluntarily with the full enumeration method. The data were collected through an online survey due to the epidemic period. After explaining the aim and importance of the research to the students, the data collection phase was started.

The personal information form prepared by the researchers consisted of questions about independent variables such as gender and class level according to the study, as well as the precautions were taken by the students in clinical practices (Ex: Do you question each patient's travel history before starting dental treatment?) and COVID-19 histories (Ex: Have you been vaccinated against COVID-19?).

The Perceived Stress Scale (PSS) was developed by Cohen, Kamarck, and Mermelstein (1983).<sup>13</sup> Moreover, Turkish adaptation was performed by Eskin *et al.*<sup>14</sup> (2013). The PSS, consisting of 14 items in total, was designed to measure how stressful some situations in one's life are perceived. Participants evaluate each item on a 5-point Likert-type scale ranging from "Never (0)" to "Very often (4)". Seven of the items with positive expressions were scored in reverse. In this study, the analysis performed over the total score and the Cronbach Alpha reliability coefficient of the scale was determined as 0.774.

The Jamovi program (Version 1.0.4) (<https://www.jamovi.org>) was used for statistical analysis. The comparison of the answers to the questions asked about COVID-19 according to gender and class was examined with the chi-square test. Moreover, the comparison of the mean score obtained due to the perceived stress scale according to gender and class (normal distribution was observed in the Shapiro-Wilk test) was measured by Chi-Square analysis. According to the measures taken in clinical practices, the students' perceived stress levels were measured with the independent sample t-test, again considering the normality distribution. Significance was determined as  $p < 0.05$ .

## Results

The demographic information of the participants was presented in Table 1. Of the total 168 participants, 89 were female and 79 were male students. Besides, it was seen that 101 students from the 4th-grade students and 67 students from the 5th-grade students participated.

Table 1. Demographic information of dentistry students

Demographic information		f	%
Gender	Female	89	52.9
	Male	79	47.1
Grade level	4.Grade	101	60.1
	5.Grade	67	39.9

Chi-square analysis was conducted to reveal the relationship between the answers given by the students studying at the Faculty of Dentistry to the questions

asked about COVID-19, gender, and grade level. The results were shown in Table 2 and Table 3.

Table 2. Comparison of the answers given to the questions about COVID-19 by gender (Chi-square test)

COVID-19 Questions	Female (N=89)	Male (N=79)	Total (N=168)	p value
A1				0.4441
Yes	69.0(77.5%)	65.0(82.3%)	134.0(79.8%)	
No	20.0(22.5%)	14.0(17.7%)	34.0(20.2%)	
A2				0.2571
Yes	88.0(98.9%)	76.0(96.2%)	164.0(97.6%)	
No	1.0(1.1%)	3.0(3.8%)	4.0(2.4%)	
A3				0.7591
Yes	29.0(32.6%)	24.0(30.4%)	53.0(31.5%)	
No	60.0(67.4%)	55.0(69.6%)	115.0(68.5%)	
A4				0.3341
Yes	74.0(83.1%)	61.0(77.2%)	135.0(80.4%)	
No	15.0(16.9%)	18.0(22.8%)	33.0(19.6%)	
A5				0.2711
Yes	47.0(52.8%)	35.0(44.3%)	82.0(48.8%)	
No	42.0(47.2%)	44.0(55.7%)	86.0(51.2%)	
A6				0.0771
Yes	56.0(62.9%)	39.0(49.4%)	95.0(56.5%)	
No	33.0(37.1%)	40.0(50.6%)	73.0(43.5%)	
A7				0.1811
Yes	70.0(78.7%)	55.0(69.6%)	125.0(74.4%)	
No	19.0(21.3%)	24.0(30.4%)	43.0(25.6%)	
A8				<b>0.0111*</b>
Yes	71.0(79.8%)	49.0(62.0%)	120.0(71.4%)	
No	18.0(20.2%)	30.0(38.0%)	48.0(28.6%)	
A9				<b>0.0331*</b>
Yes	12.0(13.5%)	21.0(26.6%)	33.0(19.6%)	
No	77.0(86.5%)	58.0(73.4%)	135.0(80.4%)	
A10				0.5131
Yes	66.0(74.2%)	55.0(69.6%)	121.0(72.0%)	
No	23.0(25.8%)	24.0(30.4%)	47.0(28.0%)	
A11				0.3131
Yes	81.0(91.0%)	68.0(86.1%)	149.0(88.7%)	
No	8.0(9.0%)	11.0(13.9%)	19.0(11.3%)	
A12				0.0911
Yes	70.0(78.7%)	53.0(67.1%)	123.0(73.2%)	
No	19.0(21.3%)	26.0(32.9%)	45.0(26.8%)	
A13				0.9911
Yes	54.0(60.7%)	48.0(60.8%)	102.0(60.7%)	
No	35.0(39.3%)	31.0(39.2%)	66.0(39.3%)	
A14				0.9381
Yes	23.0(25.8%)	20.0(25.3%)	43.0(25.6%)	
No	66.0(74.2%)	59.0(74.7%)	125.0(74.4%)	
A15				0.0781
Yes	77.0(86.5%)	60.0(75.9%)	137.0(81.5%)	
No	12.0(13.5%)	19.0(24.1%)	31.0(18.5%)	
A16				0.2531
Yes	85.0(95.5%)	72.0(91.1%)	157.0(93.5%)	
No	4.0(4.5%)	7.0(8.9%)	11.0(6.5%)	
A17				0.4941
Yes	85.0(95.5%)	77.0(97.5%)	162.0(96.4%)	
No	4.0(4.5%)	2.0(2.5%)	6.0(3.6%)	
A18				0.8821
Yes	69.0(77.5%)	62.0(78.5%)	131.0(78.0%)	
No	20.0(22.5%)	17.0(21.5%)	37.0(22.0%)	
A19				0.4291
Yes	38.0(42.7%)	29.0(36.7%)	67.0(39.9%)	
No	51.0(57.3%)	50.0(63.3%)	101.0(60.1%)	

Table 3. Comparison of the answers given to the questions about COVID-19 according to Grades (Chi-square test)

COVID-19 Questions	4 <sup>th</sup> grade (N=101)	5 <sup>th</sup> grade (N=67)	Total (N=168)	p value
A1				0.0741
Yes	76.0(75.2%)	58.0(86.6%)	134.0(79.8%)	
No	25.0(24.8%)	9.0(13.4%)	34.0(20.2%)	
A2				0.5381
Yes	98.0(97.0%)	66.0(98.5%)	164.0(97.6%)	
No	3.0(3.0%)	1.0(1.5%)	4.0(2.4%)	
A3				<0.0011*
Yes	47.0(46.5%)	6.0(9.0%)	53.0(31.5%)	
No	54.0(53.5%)	61.0(91.0%)	115.0(68.5%)	
A4				<0.0011*
Yes	69.0(68.3%)	66.0(98.5%)	135.0(80.4%)	
No	32.0(31.7%)	1.0(1.5%)	33.0(19.6%)	
A5				<0.0011*
Yes	66.0(65.3%)	16.0(23.9%)	82.0(48.8%)	
No	35.0(34.7%)	51.0(76.1%)	86.0(51.2%)	
A6				<0.0011*
Yes	73.0(72.3%)	22.0(32.8%)	95.0(56.5%)	
No	28.0(27.7%)	45.0(67.2%)	73.0(43.5%)	
A7				<0.0011*
Yes	85.0(84.2%)	40.0(59.7%)	125.0(74.4%)	
No	16.0(15.8%)	27.0(40.3%)	43.0(25.6%)	
A8				0.0321*
Yes	66.0(65.3%)	54.0(80.6%)	120.0(71.4%)	
No	35.0(34.7%)	13.0(19.4%)	48.0(28.6%)	
A9				0.2601
Yes	17.0(16.8%)	16.0(23.9%)	33.0(19.6%)	
No	84.0(83.2%)	51.0(76.1%)	135.0(80.4%)	
A10				0.1891
Yes	69.0(68.3%)	52.0(77.6%)	121.0(72.0%)	
No	32.0(31.7%)	15.0(22.4%)	47.0(28.0%)	
A11				0.0751
Yes	86.0(85.1%)	63.0(94.0%)	149.0(88.7%)	
No	15.0(14.9%)	4.0(6.0%)	19.0(11.3%)	
A12				0.7081
Yes	75.0(74.3%)	48.0(71.6%)	123.0(73.2%)	
No	26.0(25.7%)	19.0(28.4%)	45.0(26.8%)	
A13				<0.0011*
Yes	74.0(73.3%)	28.0(41.8%)	102.0(60.7%)	
No	27.0(26.7%)	39.0(58.2%)	66.0(39.3%)	
A14				<0.0011*
Yes	37.0(36.6%)	6.0(9.0%)	43.0(25.6%)	
No	64.0(63.4%)	61.0(91.0%)	125.0(74.4%)	
A15				<0.0011*
Yes	73.0(72.3%)	64.0(95.5%)	137.0(81.5%)	
No	28.0(27.7%)	3.0(4.5%)	31.0(18.5%)	
A16				0.6961
Yes	95.0(94.1%)	62.0(92.5%)	157.0(93.5%)	
No	6.0(5.9%)	5.0(7.5%)	11.0(6.5%)	
A17				0.1721
Yes	99.0(98.0%)	63.0(94.0%)	162.0(96.4%)	
No	2.0(2.0%)	4.0(6.0%)	6.0(3.6%)	
A18				0.0021*
Yes	87.0(86.1%)	44.0(65.7%)	131.0(78.0%)	
No	14.0(13.9%)	23.0(34.3%)	37.0(22.0%)	
A19				0.1681
Yes	36.0(35.6%)	31.0(46.3%)	67.0(39.9%)	
No	65.0(64.4%)	36.0(53.7%)	101.0(60.1%)	

In terms of genders, there was a significant difference between the answers given to the questions "Do you think a surgical mask is sufficient to prevent COVID-19

cross-infection?" (A8) and "Should N-95 masks be routinely worn in dentistry?" (A9) due to the current epidemic (p<0.05). There was no significant difference

between the answers given to the other questions in terms of gender ( $p>0.05$ ). More female answered yes to the question "Do you think the surgical mask is sufficient to prevent COVID-19 cross infection?", compared to male ( $p<0.05$ ). More male answered yes to the question "Should N-95 masks be routinely worn in dentistry due to the current epidemic?", compared to female ( $p<0.05$ ).

There was a significant difference between the answers given to the questions ( $p<0.05$ );

(A3), Do you question each patient's travel history before starting dental treatment?

(A4), Do you measure each patient's body temperature before starting dental treatment?

(A5), Do you question the vaccination history of the patient while taking the anamnesis?

(A6), Do you question the history of COVID-19 while taking anamnesis from the patient?

(A7), Do you postpone dental treatment of patients showing suspicious symptoms?

(A8), Do you think surgical mask is sufficient to prevent covid-19 cross-infection?

(A13), Do you routinely follow universal infection control precautions for each patient?

(A14), Do you use a rubber dam in every patient?

(A15), Before treatment do you ask each patient to rinse their mouth with an antibacterial mouthwash?

(A18), Do you pay attention to the social distance in the clinic (extra staff, patient relatives)?

When the results were examined in terms of classes; a significant difference was found between the answers given to the questions shown above ( $p<0.05$ ). Significantly more 5th grade students said yes to the 4th, 8th and 15th questions compared to the 4th-grade students. ( $p<0.05$ ). On the other hand, significantly more 4th-grade students said yes to the 3rd, 5th, 6th, 7th,

13th, 14th, and 18th questions compared to the 5th-grade students ( $p<0.05$ ).

To determine the perceived stress levels of the students according to gender, an independent sample t-test was conducted at the significance level of 0.05. Results have shown that female students' stress levels ( $X=2.33\pm0.66$ ) were significantly higher than male students ( $X=2.07\pm0.57$ ). When the results according to the class level were examined; it was observed that the stress levels of the 5<sup>th</sup>-grade students ( $X=2.41\pm0.67$ ) were significantly higher than the 4<sup>th</sup>-grade students ( $X=2.08\pm0.57$ ). (Table 4)

To determine the perceived stress levels of the students according to the rubber dam usage situation, an independent sample t-test was conducted at the significance level of 0.05. The results were showed that the stress levels of the students using rubber dam ( $X=28.29\pm5.79$ ) were significantly lower than the students not using rubber dam ( $X=30.59\pm8.04$ ).

To determine the perceived stress levels of students according to the status of paying attention to social distance in the clinic, an independent sample t-test was conducted at the significance level of 0.05. The results showed that the stress levels of the students paying attention to social distance ( $X=29.21\pm7.03$ ) showed a significantly lower level than those not paying attention to social distance ( $X=32.83\pm8.80$ ).

An independent sample t-test was conducted at the significance level of 0.05 to determine the perceived stress levels of the students according to their knowledge of the institution to be contacted in case of infection. The results showed that the stress levels of the students with communication knowledge ( $X=28.65\pm6.76$ ) were significantly lower than the students who did not have communication information ( $X=32.12\pm8.30$ ). (Table 5)

Table 4. Comparison of Perceived Stress Scale mean score by gender and class with independent sample t-test

	N	Mean	SD	SE	p- value
Gender					
Female	89	2.33	0.66	0.07	0.009
Male	79	2.07	0.57	0.06	
Class					
4 <sup>th</sup> grade	101	2.08	0.57	0.06	0.001
5 <sup>th</sup> grade	67	2.41	0.67	0.08	

Table 5. Perceived stress levels of students according to the protection measures taken in clinical practices

Variables	N	Mean	SD	SE	p- value
Using Rubber Dam					
Yes	44	28.29	5.79	0.87	0.045
No	124	30.59	8.04	0.72	
Paying Attention to Social Distancing					
Yes	132	29.21	7.03	0.61	0.011
No	36	32.83	8.80	1.46	
Having Contact Information When Encountered with Infection					
Yes	103	28.65	6.76	0.66	0.004
No	65	32.12	8.30	1.03	

## Discussion

This research was designed to determine the precautions taken in clinical practice and perceived stress levels of students studying in the 4<sup>th</sup> and 5<sup>th</sup>-grades of the faculty of dentistry during the epidemic period. The results of the research showed that taking preventive measures in clinical practices reduced the students' perceived stress levels. Moreover, it was determined that the perceived stress level of male students and 4<sup>th</sup>-grade students was lower during the COVID-19 process.

The results indicated that male students perceived this process as less stressful than female students. Wang *et al.*<sup>16</sup> (2020) examined the psychological reactions and related factors in the first phase of the COVID-19 epidemic and found that women have experienced higher levels of stress than men. These results were consistent with the results of our study. In general, it can be said that the fact that women have a more stressful lifestyle than men is reflected in the clinical management during the epidemic process.

The reason why the stress levels of the 5<sup>th</sup>-grade students were higher than the 4<sup>th</sup>-grade students can be seen as the 4<sup>th</sup>-grade students' inexperience in the treatment of infected patients in the clinic and their less familiarity with the clinical environment. In the study of Lingawi and Afifi (2020) on the anxiety levels of dental students, no significant difference was found between students in different classes in terms of stress levels.<sup>9</sup> Although the concepts of anxiety and stress were known as different concepts in terms of severity and duration, it is known that they are used interchangeably in the literature. In this respect, it can be said that the results of the study did not match the results of the present study.

It was found that the stress levels of the students who use a rubber dam in each patient, pay attention to social distance in the clinic and have the knowledge of the institution to be contacted in case of infection were lower. This situation can be interpreted as students who can take the right protection measures can feel safer. In other words, it was observed that the stress levels of the students who were sensitive to taking clinical precautions during the COVID-19 period and who can manage the process more positively were lower. In their study, Polat and Coşkun (2020) examined the relationship between the use of personal protective equipment and depression, anxiety, and stress levels, it was determined that the depression, anxiety, and stress scores of the health workers who stated that they used their equipment appropriately when necessary, were low.<sup>17</sup>

According to our results, it was found that 4<sup>th</sup>-grade students were more sensitive when questioning the patient's anamnesis. The reason for this can be shown as the fact that 4<sup>th</sup>-grade students have just left the theoretical education and have just started the clinical practice. It was observed that 5<sup>th</sup>-grade students attached more importance to relatively routine practices such as using antiseptic mouthwash and measuring body

temperature before the procedure, rather than the patient's anamnesis.

In our study, male students gave more importance to the necessity of using N95 masks than female students. No studies have been found in the literature that can be compared with this result. This can be seen as a limitation of the study. Another limitation of this study is that it was conducted only in the RTEU sample. The content of the research can be expanded by including students from other public and private universities.

## Conclusions

The results of the research showed that taking preventive measures in clinical practices reduced the students' perceived stress levels. In addition, it was determined that the perceived stress level of male students and 4<sup>th</sup>-grade students were lower during the COVID-19 process. We hope that the results of the research can reduce the perceived stress levels of dental students with the development of personal protection measures in the COVID-19 pandemic and contribute to the development of support strategies.

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None to declare.

## Conflicting of Interests

All authors declare no conflict of interest.

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