Clinical and Experimental Health Sciences

Depression Anxiety Stress Levels of Dentists Redeployed to Filiation due to the COVID-19 Pandemic

Nuray Bağcı, Umut Pamukçu, İlkay Peker

Gazi University, Faculty of Dentistry, Department of Dentomaxillofacial Radiology, Ankara, Türkiye.

Correspondence Author: Nuray Bağcı
E-mail: nuraysesli@gazi.edu.tr
Received: 01.07.2022 **Accepted:** 22.08.2022

ABSTRACT

Objective: The aim of this study is to investigate the levels of depression, stress, and anxiety of dentists redeployed to filiation during the COVID-19 pandemic and to determine the factors that caused any changes observed.

Methods: An online questionnaire was sent to dentists redeployed to filiation due to the COVID-19 pandemic. The questionnaire consisted of three parts: I) demographic characteristics, II) working conditions in filiation, and III) the DASS-21 scale, which evaluates the Depression, Anxiety, and Stress states of participants.

Results: 206 (164 female, 42 male) voluntary dentists participated in the study. Off all participants, 77.2% had symptoms of depression, 73.8% had symptoms of anxiety, and 59.7% had symptoms of stress. All subscales of the DASS-21 were statistically significantly higher in females than in males, in single dentists than in married dentists, and in those living alone than in those living with family or friends. Among the dentists redeployed to filiation during the COVID-19 pandemic, female gender, living alone, and working at a university were found to be effective factors that constituted the high scores of any of the DASS-21 subscales.

Conclusion: Dentists who were redeployed to filiation during the COVID-19 pandemic stated that they were negatively emotionally affected. Dentists can always be redeployed to the public health method in case of social emergencies. Therefore, dentists need to be trained and motivated for redeployment.

Keywords: COVID-19, Filiation, DASS-21, Dentist, Redeployed

1. INTRODUCTION

In December 2019, a disease caused by a novel *coronavirus* (2019 n-CoV) emerged in Wuhan, China (1). The disease was named coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO). COVID-19 was declared a global pandemic by the WHO on 11 March 2020 (2). The number of cases of infection is increasing because of the high speed of transmission, and in consequence, the workload on healthcare services has been getting heavier day by day, around the world. In many countries, health care professionals, including dentists, are being redeployed to the outside of their workplaces to support COVID-19 health services (3).

Dentists have sufficient knowledge about systemic diseases, medical history, craniofacial anatomy, prescribing drugs, using personal protective equipment (PPE), infection control, and effective communication with patients because of the experience they have gained from their training and routine clinical practices (4). In many countries, according to their national health policies during the COVID-19 pandemic, dentists have been redeployed to assist with different medical services, such as physician assistance, radiological diagnosis, sample collection, online counselling and prescribing, the collection and distribution of medical supplies, medical evacuation and transfer, community volunteering, psychological support, intensive care unit support, renal wards support, accident and emergency services, informative telephonic services, and community nursing (5-9). Since aerosol-generating dentistry procedures inherently carry a high risk of COVID-19 transmission, many dental treatments have been postponed during the pandemic period (10). Dentists whose workloads were reduced during

DOI: 10.33808/clinexphealthsci.1139507

the COVID-19 pandemic were redeployed to different areas of the struggle against the virus (4).

In Turkey, dentists have been redeployed to filiation during the COVID-19 pandemic. Filiation is an important public health method that aids to interrupt the transmission chain and prevent the spread of infection (11). Filiation, which includes methods known in the literature as contact tracing, constitutes an important pillar of the COVID-19 struggle in Turkey and has been carried out successfully. Since the detection of the first COVID-19 case in Turkey, the filiation teams that have been established by the Turkish Ministry of Health have been working. These filiation teams first reach the infected by phone and then visiting their houses. Their duties are to follow-up on each case, perform contact tracing, take anamnesis, supply medication, and take samples for COVID-19 polymerase chain reaction (PCR) tests when necessary (12). A filiation team is comprised of one physician or dentist, one medical staff member, and one assistant staff member (13). Dentists have sufficient knowledge and a good command of the intraoral anatomy, and they have a high level of hand-skill practices that provide a great convenience in the taking of samples. Thus, many have been redeployed to filiation teams (14). Thus, the dentists, whose main task is to protect oral health in the clinical environment, have been redeployed in the field to support the health system against the current COVID-19 pandemic.

All healthcare professionals have been playing an active and important role during the COVID-19 pandemic, both inside hospitals and outside of the hospital setting (in a filiation team). Healthcare professionals who provide such services may experience psychological problems in the process (15-18). These problems can be triggered by the increasing number of cases, intensive workload, exposure to infected patients, risk of contamination, and need to trace new information about the disease (19). Although many previous studies have shown that the COVID-19 pandemic has increased depression, anxiety, stress, and insomnia in healthcare professionals, only a few studies have reported negative emotional states in dentists redeployed outside of dental clinics (7,20). The aim of this study is to investigate the levels of depression, stress, and anxiety of dentists redeployed to filiation during the COVID-19 pandemic and to address the factors that may cause these conditions.

2. METHODS

This study was approved by the Gazi University Ethics Committee (Date: 10/07/2020, Research Number: 2020–661), and all stages of the study were conducted in accordance with the Declaration of Helsinki.

Dentists redeployed to filiation during the COVID–19 pandemic in Turkey were included in the study. For this study, a special questionnaire consisting of 40 questions in 3 parts was prepared. The online questionnaire was created on Google Forms (Alphabet, Mountain View, CA, USA) and was delivered to volunteer participants via WhatsApp© (WhatsApp Inc, USA) between 20 December 2020 and 20 January 2021.

In the submitted form, there was a paragraph giving information about the study at the beginning of the questionnaire. The distribution of 40 questions according to three topic titles in the questionnaire was as follows. Part 1: 7 questions about demographic characteristics; Part 2: 12 questions about filiation working conditions; Part 3: the 21 questions of the Depression, Anxiety, Stress Scale–21 (DASS–21).

DASS–21 is a 21–item, shortened form of the 42–item Depression, Anxiety, Stress Scale created by Lovibond SH and Lovibond PF (21). DASS–21 aims to evaluate the relationships between environmental demands, emotional disturbances, and physical disturbances in individuals by means of depression, anxiety, and stress subscales. Each of these subscales consists of seven different items to which the participant is instructed to responded according to the mood of the last week. Responses to each item are graded on a 4-point Likert-type scale (0=Never, 1=Sometimes and occasionally, 2= Quite often, 3=Always). The individual's scores are added up, and higher scores indicate a more violent mood in a negative sense. Scores on the depression subscale are interpreted as: 0–4 is 'normal', 5–6 is 'mild', 7–10 is 'moderate', 11–13 is 'severe', and 14 and above is 'extremely severe'. Score on the anxiety subscale are interpreted as: 0–3 is 'normal', 4–5 is 'mild', 6–7 is 'moderate', 8–9 is 'severe', and 10 and above is 'extremely severe'. Score on the stress subscale are interpreted as: 0–7 is 'normal', 8–9 is 'mild', 10–12 is 'moderate', 13–16 is 'severe', and 17 and above is 'extremely severe'.[21] In 2018, Sarıçam conducted validity and reliability studies on the Turkish version of the DASS–21, and the scale was found to be a valid and reliable instrument in the assessment of depression, anxiety, and stress levels (22).

Statistical Analysis

The sample size was calculated before starting the study via a power analysis. The analysis was conducted using the G*Power software package under a power of 90 %, an assumed effect size of 0.3, and a Type–I error (alpha) of 0.05 (23). The appropriate sample size, given these parameters, was found to be 194 individuals.

IBM SPSS Statistics Version 23.0 (SPSS Inc., Chicago, IL, USA) was used for all other statistical analyses. Regarding the presentation of descriptive statistical information, categorical variables are presented as a number (%), and continuous variables are presented as a mean ± a standard deviation. The normality of the data was assessed using the Kolmogorov–Smirnov test. Two-groups comparisons were conducted via Student's *t*–tests, and comparisons between more than two groups were conducted by means of analyses of variance (ANOVA). The associations between age and subscale scores were explored by using Pearson`s correlation test. Multiple linear regression analysis was employed as a method to identify potential effective factors on depression,

anxiety, and stress. A *p*–value of less than 0.05 is regarded to be indicative of a statistically significant result.

3. RESULTS

Two hundred six (164 female, 42 male) dentists voluntary participated in the study. The original questionnaire form and the distributions of the responses, in terms of numbers and percentages, are shown in Table 1.

Table 1. *Distribution, demographic characteristics, filiation working conditions, and means of DASS-21 subscale scores of the participants, according to their responses on original questionnaire, presented as n (%) with N=206*

Part I: Demographic characteristics		n (%)
Age		34.71±8.12#
Gender	Female	164 (79.6 %)
	Male	42 (20.4 %)
Working institution	Ministry of Health institution	157 (76.2 %)
	University	31 (15.0 %)
	Other	18 (8.7 %)
Work experience	0–5 years	79 (38.3 %)
	6–10 years	37 (18.0 %)
	≥11 years	90 (43.7 %)
Marital status	Single	68 (33.0 %)
	Married	138 (67.0 %)
Having child	Yes	111 (53.9 %)
	No	95 (46.1 %)
Household	Living alone	28 (13.6 %)
	Living with family or friends	178 (86.4 %)
Part II: Filiation working conditions		
How did you get information about the procedures of filiation?*		
I was informed by the Ministry of Health via WhatsApp, internet etc.		93 (45.2 %)
I got information from a physician experienced on filiation		101 (49.1 %)
I did research on my own		55 (26.7 %)
How many cases did you probably reach during filiation?		4008.5±23324.4#
How often do you use the N95 / FFP2 mask during filiation?	Never	2 (1 %)
	Sometimes	22 (10.7 %)
	Usually	43 (20.9 %)
	Always	139 (67.5 %)
How often do you wear the face visor / protective glasses during the filiation?	Never	3 (1.5 %)
	Sometimes	23 (11.2 %)
	Usually	50 (24.3 %)
	Always	130 (63.1 %)
How often do you use the disposable apron / overalls during the filiation?	Never	1 (0.5 %)
	Sometimes	12 (5.8 %)
	Usually	57 (27.7 %)
	Always	136 (66 %)
Did you have COVID-19 infection?		
No		157 (76.2 %)
Yes		49 (23.8 %)
If you had COVID-19 infection, when did you?		
Before starting filiation		9 (4.4 %)
Within 14 days after the start of filiation		5 (2.4 %)
During filiation		34 (16.5 %)
Within 14 days after the end of filiation		1 (0.5 %)
In your opinion, which process is risker during COVID-19 pandemic?		
Filiation		16 (7.8 %)
Dental procedures		190 (92.2 %)
Which process would you prefer to do during COVID-19 pandemic?		
Filiation		164 (79.6 %)
Dental procedures		42 (20.4 %)
Worried about being redeployed to filiation?		
No		42 (20.4 %)
Yes		164 (79.6 %)
If you are worried, what are the reason(s)?*		
Workload excess		102 (21.1 %)
Infecting my relatives with COVID-19 or other disease		153 (32.3 %)
Lack of personal protective equipment		40 (8.6 %)
Lack of adequate security measures		82 (17.2 %)
Negative discrimination in the society		81 (17.1 %)
Other (become distant from dental clinic, adverse weather conditions, working at night, fear of traffic accidents, etc.)		17 (3.5 %)
Have you got psychological support at any period in your life?		
No		168 (81.6 %)
Yes		32 (15.5 %)
I started to get after filiation		6 (2.9 %)
Part III: DASS–21		
Depression		10.17±6.37#
Anxiety		7.94±5.54#
Stress		9.95±6.21#

*# : mean ± standard deviation, *: multiple–choice question, DASS–21: Depression Anxiety Stress Scale*

The distribution of the symptoms observed in the participants and their severity according to the DASS–21 scale is shown in Table 2. According to the three different subscales that formed the DASS–21, it was observed that the participants were mostly at normal levels in terms of stress and worse from normal in terms of depression and anxiety. The rest of the participants showed varying severities of depression, anxiety, and stress symptoms. The distribution of symptoms among all participants was as 77.2 % (N = 159) depression, 73.8 % (N = 152) anxiety, and 59.7 % (N = 123) stress. Extremely severe depression and anxiety symptoms were observed at the highest rates (33.0 % and 40.3 %, respectively), and according to the stress subscale, severe stress symptoms were observed at the highest rate (21.8 %).

The findings of univariate analyses for the subscales of DASS–21 in the overall sample are presented in Table 3. The results revealed a statistically significant differences within each subscale score between genders, marital statuses, and

households. All scores were statistically significantly higher in females than in males, in single dentists than in married dentists, and in dentists living alone than in dentists living with family or friends. Statistically significant differences between depression, and stress subscale scores were found between working institutions, and having children. Working in a university was associated with higher depression and stress scores, whereas having child was associated with lower scores in depression and stress. No statistically significant relationship between age and work experience was found with any subscale score.

A multiple linear regression analysis was performed to determine the independent effects of the significant variables obtained from the univariate analysis in Table 3 on the subscale scores of the DASS–21. It was found, statistically significantly, that female gender and living alone are effective factors on depression, that female gender, living alone, and working at a university are effective factors on anxiety, and that female gender is an effective factor on stress. The results of this analysis are shown in Table 4.

Table 2. *Distribution of the symptoms observed in the participants and their severity according to the DASS–21 scale*

Severity	Symptoms		
	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	47 (22.8 %)	54 (26.2 %)	83 (40.3 %)
Mild	18 (8.7 %)	31 (15.0 %)	20 (9.7 %)
Moderate	48 (23.3 %)	20 (9.7 %)	25 (12.1 %)
Severe	25 (12.1 %)	18 (8.7 %)	45 (21.8 %)
Extremely severe	68 (33.0 %)	83 (40.3 %)	33 (16.0 %)

Table 3*. Univariate analyses of the factors associated with the subscales of DASS–21, (N = 206)*

	Depression			Anxiety			Stress		
	Mean±Sd	Test statistics	*p-value*	Mean±Sd	Test statistics	*p-value*	Mean±Sd	Test statistics	*p-value*
Age		r=0.117	*0.095*		r=0.06	*0.931*		r=0.066	*0.344*
Gender									
Female	10.84±6.33	t=3.071	*0.002**	8.47±5.35	t=2.768	*0.006**	10.74±5.99	t=3.731	*<0.000**
Male	7.52±5.86			5.86±5.85			6.86±6.14		
Working institution									
Ministry of Health institution	9.83±6.31	F=4.969	*0.008**[1]	7.94±5.53	F=2.933	*0.055*	9.61±6.10	F=5.206	*0.006**[2]
University	13.16±6.00			9.39±5.68			12.97±6.05		
Other	7.89±6.10			5.44±4.68			7.78±5.95		
Work experience									
0-5 years	10.95±6.46	F=1.936	*0.147*	7.67±5.69	F=0.351	*0.704*	10.13±6.48	F=0.108	*0.898*
6-10 years	10.89±6.39			8.59±5.93			10.14±6.43		
≥11 years	9.18±6.21			7.90±5.28			9.72±5.932		
Marital status									
Single	12.60±5.96	t=3.991	*<0.000**	9.25±5.71	t=2.414	*0.017**	11.53±6.15	t=2.595	*0.010**
Married	8.96±6.24			7.29±5.36			9.17±6.11		
Having child									
Yes	8.78±6.25	t=-3.450	*0.001**	7.39±5.31	t=-1.543	*0.124*	9.01±5.87	t=-2.381	*0.018**
No	11.78±6.16			8.58±5.75			11.05±6.43		
Household									
Living alone	14.36±6.22	t=3.869	*<0.000**	10.89±6.31	t=3.098	*0.002**	12.96±6.64	t=2.807	*0.005**
Living with family or friends	9.51±6.15			7.47±5.28			9.48±6.02		

**: p<0.05, Sd: standard deviation, r: correlation coefficient, t: Student's t–tests, F: ANOVA test, [1,2]: Post–hoc analysis indicated that the scores are higher for those who work in a university than those who work in a state institution or other institution.*

Table 4. *Multiple regression analysis on each subscale of DASS-21 in the overall sample*

	B	SE	β	t	95% CI	*p–value*
Depression						
Gender	-3.436	1.042	-0.218	-3.296	-5.492, – 1.380	*0.001**
Working institution	-0.758	0.686	-0.075	-1.104	-2.111, 0.595	*0.271*
Marital status	-1.448	1.245	-0.107	-1.163	-3.903, 1.007	*0.246*
Having child	1.308	1.121	0.103	1.167	-0.902, 3.518	*0.245*
Household	-3.415	1.456	-0.184	-2.345	-6.287, – 0.543	*0.020**
Anxiety						
Gender	-2.768	0.929	-0.202	-2.980	-4.600, – 0.936	*0.003**
Working institution	-1.242	0.611	-0.141	-2.031	-2.447, – 0.036	*0.044**
Marital status	-0.795	1.109	-0.068	-0.716	-2.982, 1.393	*0.475*
Having child	-0.073	0.999	-0.007	-0.073	-2.043, 1.896	*0.942*
Household	-3.509	1.298	-0.217	-2.704	-6.068, – 0.950	*0.007**
Stress						
Gender	-4.018	1.034	-0.261	-3.887	-6.056, – 1.979	*<0.000**
Working institution	-0.551	0.680	-0.056	-0.810	-1.892, 0.791	*0.419*
Marital status	-0.465	1.235	-0.035	-0.377	-2.900, 1.969	*0.707*
Having child	1.152	1.111	0.093	1.037	-1.039, 3.344	*0.301*
Household	-2.742	1.444	-0.152	-1.899	-5.590, 0.105	*0.059*

B: Unstandardized beta coefficient, SE: Standard error, β: Standardized beta coefficient, CI: Confidence Interval

4. DISCUSSION

During the COVID-19 pandemic, dentists have been redeployed to different tasks such as filiation, monitoring vital signs and biochemical indicators, collecting of the nasopharyngeal swab for PCR testing, online consultation, prescribing required medications, triaging, supporting intensive care units, neurosurgery/ear nose physicians, and throat/ophthalmology physicians, and supporting community nursing (5-9,20). In Turkey, contact tracing, isolation, and PCR tests are being successfully carried out with the support of the filiation teams within which dentists are redeployed (12). In the present study, the working conditions and emotional states of dentists who were redeployed to filiation were investigated. The results of the study revealed that depression, anxiety, and stress symptoms, ranging in severity from mild to extremely severe, were observed in the study participants. Female gender, living alone, and working at a university were factors that were found to increase the effect of these negative emotional states. Despite all of the negative emotional states reported by dentists redeployed to filiation, and they predominantly preferred filiation to dental procedures during the pandemic.

In many studies, it has been shown that healthcare professionals who are working at the frontline of the COVID-19 pandemic were adversely psychologically affected (15-18). In previous studies in which the emotional states of working healthcare professionals were questioned, the rates of professionals suffering from depression have been between 50.4 %-77.6 %, from anxiety have been between 51.6 %-60.2 %, and from stress have been between 41.2 %-76.4 %, with 50.4 % suffering from insomnia (15,16,24). Considering the transmission mechanism of COVID-19, aerosols formed as a result of dental procedures pose a significant risk (10). Dentists, their assistant staff, and the patients they serve are therefore at a high risk of transmission and spread of the disease, as they are in close contact with potentially symptomatic/asymptomatic COVID-19 patients who apply to dental clinics for treatment (25). There were several studies that found that the degree of stress experienced by dentists increased significantly during the COVID-19 pandemic (20,25-31). Because of the nature of the procedures conducted in dentistry, more than 90 % of dentists are concerned about the transmission of COVID-19 (25). Studies evaluating the emotional states of dental staff during the COVID-19 pandemic period indicate that stress levels vary between 11.5 % and 95 % (20,25-31). According to our knowledge, few studies examined the emotional states of dentists who were redeployed outside of their dental clinics during the COVID-19 pandemic (7,20). Due to the fact that dentists performed fewer dental procedures in the first period of the COVID-19 pandemic, as reported by a study conducted during this period, the level of occupational burnout was higher in dentists redeployed to filiation (20). In the present study, which was conducted in the late period of the COVID-19 pandemic, most of the participants reported that dental procedures are riskier than filiation and preferred filiation to performing dental procedures. Unlike in the previous study, the reason why dentists now prefer filiation to dental treatments in the current study may be that aerosol-containing treatments started to be applied in the late period, unlike in the early period of the pandemic. Therefore, it can be considered as an expected situation for dentists to accept dental procedures as riskier than filiation during the COVID-19 pandemic. In a study of dentists redeployed to different

medical services of a hospital during the COVID-19 pandemic, it was noted that 52.6 % of the participants felt anxiety and, while 43.9 % felt confident about the new assignments (7). In this study, most of the participants who were redeployed to filiation showed symptoms of varying severity of depression, anxiety, and stress. Consistent with studies in the literature, 77.2 % of all participants had depression, 73.8 % had anxiety, and 59.7 % had stress. The differences can be attributed to the different sample sizes, study methods, questions, the fact that the studies were conducted at different times during the pandemic period, and the dentists' increased knowledge about the disease. Also, it was stated that dentists in different countries will exhibit different levels of subjective overload due to their healthcare systems' instructions, which in turn may affect their psychological distress and burnout (27). It was an expected situation to observe different psychological negativities in healthcare professionals in both those working directly in treatment and those redeployed to filiation of COVID-19 infected or suspected patients. This was due to continue about the extent of the pandemic and how vaccination would yield results.

Although dentists redeployed to filiation teams have several advantages, the personnel should be trained in the collection of the swab samples, infection control measures, and the transport of the samples (32). Also, it is recommended to develop a dental education curriculum on the management of disasters and pandemics (4,5). In a study conducted on redeployed dentists during the COVID-19 pandemic, although 71.9 % of participants received additional training, 42.1 % reported that they felt they did not receive definitive guidance on their redeployment (7). Most of the participants in the present study reported that they were informed about filiation from a physician experienced in filiation and by online services provided by the Ministry of Health. In addition, it may be important to increase the motivation of these personnel with additional information such as scientific articles, or visual or video trainings.

The use of PPE and the training of healthcare professionals in the use of PPE have important roles in the management of the pandemic. The WHO recommends that healthcare professionals who take samples from patients with suspected COVID-19 must use appropriate PPE (e.g. eye protection, N95 / FFP2 mask, long-sleeved gowns, and gloves) and train their staff on this issue (32). In the United Kingdom, it has been reported that 14 % of dental core trainers who were redeployed to areas treating COVID-19 positive or COVID-19 suspect patients did not have sufficient or correct PPE as per current national guidelines (7). In an international study investigating the use PPE by healthcare professionals working in the COVID-19 intensive care unit, it was found that most of the participants used N95 / FFP2 masks, waterproof long-sleeved gowns, and face shields / visors (58 %, 67 %, and 62 %, respectively) (33). In Italy, the usage rates of FFP2 masks, FFP3 masks, face shields, and glasses by healthcare professionals during medical treatments in the COVID-19 pandemic were reported as 50 %, 43 %, 86 %, and 14 %, respectively (34). In this study, the usage rates of N95 / FFP2 masks, face visors / protective glasses, and disposable aprons / overalls in filiation were found to be slightly higher than in previous studies (67.5 %, 63.1 %, and 66 %, respectively). These findings are important, as they show that the need for protective equipment is high during the COVID-19 pandemic. For this reason, the production of such protective equipment needs to be supported by local governments or globally.

Healthcare professionals may increase the risk of COVID-19 infection transmission due to close contact with confirmed or suspected COVID-19 patients. The frequent exposure of healthcare professionals to the virus and their heavy viral loads and lack of protective equipment in some regions not only increases the risk in the relevant regions but also may turn into a global threat (35). The rate of COVID-19 infection among healthcare professionals has been reported as 28 %, 14 %, and 5 % in various studies (36-38). In this study, the rate was 23.8 %, and 16.5 % of participants reported that they were infected during their redeployment to filiation. The differences may depend on the use of PPE, the working conditions, and the number of samples differing across the studies.

Healthcare professionals have been taking an active role in the current COVID-19 pandemic (16). It is known that this situation may cause concern in healthcare professionals, due to the risk of infection, the fear of infecting relatives, and negative discrimination from society (16,19,25). In the present study, most of the participants reported that they were worried because of the redeployment to filiation, and the main cause of worry was the risk of infecting their relatives. Although the dentists now stated that they prefer filiation to dental procedures, working directly in contact with confirmed or suspected COVID-19 may still cause concern for dentists. In addition, a small rate of the participants in this study reported that they started to get psychological support after their redeployment to filiation.

In studies conducted during the COVID-19 pandemic, it has been reported that females, young people, those with a history of psychiatric disorders, and front-line healthcare professionals show high levels of depression, anxiety, stress, and insomnia symptoms (15,16,20,24,39). In addition, single individuals were found to show higher levels of depression symptoms as compared to married individuals, and those living alone at home were found to show higher levels of depression symptoms as compared to those living with family or friends (16,39). In this study, depression, anxiety, and stress levels were higher in females than in males, in singles than in married individuals, and in those living alone than in those living with family or friends. Working at a university was associated with higher scores in the depression, and stress subscales, whereas having children was associated with lower scores on these subscales. A regression analysis showed that female gender, living alone, and working at a university were independent effect factors for negative psychological conditions across almost in all subscales. The findings of the present study were consistent with the findings of previous studies. This may be related to the fact

that the pandemic is global and that healthcare professionals around the world are faced with similar situations.

This study has some limitations. Because of this questionnaire was conducted in a cross-sectional period of the pandemic, we cannot know the long-term impact of the findings. However, the high levels of depression, anxiety, and stress symptoms observed in the participants are important results to monitor in the future. Another limitation is that since participations in the questionnaire study was voluntary, the findings presented here may not reflect the views of all dentists redeployed to filiation.

5. CONCLUSION

According to the findings of the present study, different intensities of depression, anxiety, and stress symptoms, ranging from moderate to extremely severe, were observed in dentists redeployed to filiation during the COVID-19 pandemic. Female gender, living alone, and working at a university were determined to be effective factors on negative emotional states including depression, anxiety, and stress. However, despite all of these negativities, it was an interesting finding that during the COVID-19 pandemic, filiation was seen as less risky and preferred by dentists as compared to the dental procedures they routinely perform in their careers.

Because dentists can be redeployed to public health roles in emergencies, they need to be trained and motivated in this regard.

Acknowledgements: *The authors thank all participants for their valuable contribution to this study and all healthcare workers who devoted themselves to the COVID-19 pandemic.*
Funding: *The author(s) received no financial support for the research.*
Conflicts of interest: *The authors declare that they have no conflict of interest.*
Ethics Committee Approval: *This study was approved by Ethics Committee of Gazi University (Approval date: 10/07/2020 and number: 2020–661)*
Peer-review: *Externally peer-reviewed.*
Author Contributions:
Research idea: I.P., U.P.
Design of the study: I.P., U.P.
Acquisition of data for the study: I.P., U.P., N.B.
Analysis of data for the study: N.B.
Interpretation of data for the study: N.B.
Drafting the manuscript: I.P., U.P., N.B.
Revising it critically for important intellectual content: I.P., U.P.
Final approval of the version to be published: I.P., U.P.

REFERENCES

[1] World Health Organization. Novel Coronavirus (2019-nCoV) Situation Report-1. 2020. https://apps.who.int/iris/bitstream/handle/10665/330760/nCoVsitrep21Jan2020-eng.pdf?sequence=3&isAllowed=y

[2] World Health Organization. Coronavirus disease 2019 (COVID19) Situation Report-51. 2020. https://apps.who.int/iris/bitstream/handle/10665/331475/nCoVsitrep11Mar2020-eng.pdf?sequence=1&isAllowed=y

[3] Martin K, Archer N, Johnston L. Redeployment of dental trainees: challenges and opportunities during the COVID-19 pandemic. Fac Dent J. 2020; 11(4): 190-195. DOI:10.1308/rcsfdj.2020.119

[4] Sacoor S, Chana S, Fortune F. The dental team as part of the medical workforce during national and global crises. Br Dent J. 2020; 229 (2): 89-92. DOI:10.1038/s41415.020.1854-6

[5] Li G, Chang B, Li H, Wang R, Li G. The role of dental professionals in pandemic events and disaster responses. Disaster Med Public Health Prep. 2020; 11: 1-5. DOI: 10.1017/dmp.2020.140

[6] Forrester S, Fisher G, Chieng CY, Rogers SN. Oral and maxillofacial dental care professionals in critical care during the COVID-19 pandemic. Br J Oral Maxillofac Surg. 2021; 59(1): 117-120. DOI:10.1016/j.bjoms.2020.08.100

[7] Patel M, Menhadji P, Mayor S. Redeployment of dental core trainees in the United Kingdom due to Coronavirus Disease 2019. Eur J Dent. 2020; 14(S 01): 44-49. DOI:10.1055/s-0040.171.9216

[8] Galletti JrCA, Correa AE, Ogata CK, Oliveira AMFF, de Oliveira MS, de Oliveira MCQ. The importance of dental military officers during the COVID-19 pandemic. J Craniofac Surg. 2021; 32(1): e112-e113. DOI:10.1097/SCS.000.000.0000007108

[9] Johnston L, Archer N, Martin K. Swapping drills for dressings: redeployment of dentists to community nursing. Br J Community Nurs. 2020; 25 (6): 266-270. DOI:10.12968/bjcn.2020.25.6.266

[10] Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci. 2020; 12 (1): 9. DOI:10.1038/s41368.020.0075-9

[11] Üstündağ MG, Turhan S, Topbaş M, Beyhun NE. The importance of anamnesis on the filiation of COVID-19 patients and the determination of their contacts. Turk J Public Health. 2020; 18 (Special issue): 107-111.

[12] Turkish Ministry of Health. (2021). COVID-19 (Sars-CoV-2 Infection) Contact Tracking, Pandemic Management, Home Patient Monitoring and Filiation Guide. https://covid19.saglik.gov.tr/Eklenti/41530/0/covid-19rehberitemaslitakibievdehastaizlemivefilyasyon-200921-3pdf.pdf

[13] Demirtaş T, Tekiner H. Filiation: A historical term the COVID-19 outbreak recalled in Turkey. Erciyes Med J 2020; 42 (3): 354–358.

[14] Erdem B, Demir YA, Erdem F, Yılmaz ET, Uyar N. Organizational structure of İstanbul Kadıköy district health directorate in Covid-19 pandemic struggle. TJFMPC, 2021; 15(1): 170-178. DOI:10.21763/tjfmpc.760179

[15] Şahin MK, Aker S, Şahin G, Karabekiroğlu A. Prevalence of depression, anxiety, distress and insomnia and related factors in healthcare workers during COVID-19 pandemic in Turkey. J Community Health. 2020; 45 (6): 1168-1177.

[16] Elbay RY, Kurtulmuş A, Arpacıoğlu S, Karadere E. Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. Psychiatry Res. 2020; 290: 113130. DOI:10.1016/j.psychres.2020.113130

[17] Di Tella M, Romeo A, Benfante A, Castelli L. Mental health of healthcare workers during the COVID-19 pandemic in Italy. J Eval Clin Pract. 2020; 26(6): 1583-1587. DOI:10.1111/jep.13444

[18] Kramer V, Papazova I, Thoma A, Kunz M, Falkai P, Schneider-Axmann T, Hierundar A, Wagner E, Hasan A.

Subjective burden and perspectives of German healthcare workers during the COVID-19 pandemic. Eur Arch Psychiatry Clin Neurosci. 2021; 271 (2): 271-281. DOI:10.1007/s00406.020.01183-2

[19] Inter-Agency Standing Committee. Interim briefing note: Addressing mental health and psychosocial aspects of COVID-19 outbreak. Geneva: Inter-agency Standing Committee. (2020). https://interagencystandingcommittee.org/system/files/2021-03/IASC%20Interim%20Briefing%20Note%20on%20COVID-19%20Outbreak%20Readiness%20and%20Response%20Operations%20-%20MHPSS.pdf

[20] Özarslan M, Caliskan S. Attitudes and predictive factors of psychological distress and occupational burnout among dentists during COVID-19 pandemic in Turkey. Curr Psychol. 2021; 1-12. DOI:10.1007/s12144.021.01764-x

[21] Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the beck depression and anxiety inventories. Behav Res Ther. 1995; 33 (3): 335-343.

[22] Sariçam H. The psychometric properties of Turkish version of Depression Anxiety Stress Scale-21 (DASS-21) in health control and clinical samples. J Cognit Behav Psychother Res. 2018; 7: 19–30.

[23] Erdfelder E, Faul F, Buchner A. GPOWER: A general power analysis program. Behav Res Meth Instrum Comput. 1996; 28(1): 1-11. DOI:10.3758/BF03203630

[24] Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, Wu J, Du H, Chen T, Ruiting L, Huawei T, Kang L, Yao L, Huang M, Wang H, Wang G, Liu Z, Hu S. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open. 2020; 3(3): e203976. DOI:10.1001/jamanetworkopen.2020.3976

[25] Duruk G, Gümüşboğa ZŞ, Çolak C. Investigation of Turkish dentists' clinical attitudes and behaviors towards the COVID-19 pandemic: A survey study. Braz Oral Res. 2020; 34: 54. DOI:10.1590/1807-3107bor-2020.vol34.0054

[26] Shacham M, Hamama-Raz Y, Kolerman R, Mijiritsky O, Ben-Ezra M, Mijiritsky E. COVID-19 factors and psychological factors associated with elevated psychological distress among dentists and dental hygienists in Israel. Int J Environ Res Public Health. 2020; 17 (8): 2900. DOI:10.3390/ijerph17082900

[27] Mijiritsky E, Hamama-Raz Y, Liu F, Datarkar A, Mangani L, Caplan J, Shacham A, Kolerman R, Mijiritsky O, Ben-Ezra M, Shacham M. Subjective overload and psychological distress among dentists during COVID-19. Int J Environ Res Public Health. 2020; 17(14): 5074. DOI:10.3390/ijerph17145074

[28] Gasparro R, Scandurra C, Maldonato NM, Dolce P, Bochicchio V, Valletta A, Sammartino G, Sammartino P, Mariniello M, Lauro AE, Marenzi G. Perceived job insecurity and depressive symptoms among Italian dentists: The moderating role of fear of COVID-19. Int J Environ Res Public Health. 2020; 17 (15): 5338. DOI:10.3390/ijerph17155338

[29] Özdede M, Sahin S. Views and anxiety levels of Turkish dental students during the COVID-19 pandemic. J Stomatol. 2020; 73 (3): 123–128.

[30] Sarialioglu Gungor A, Donmez N, Uslu Y. Knowledge, stress levels, and clinical practice modifications of Turkish dentists due to COVID-19: A survey study. Braz Oral Res. 2021; 35: 48. DOI:10.1590/1807-3107bor-2021.vol35.0048

[31] Peixoto KO, Resende CMBMD, Almeida EOD, Almeida-Leite CM, Conti PCR, Barbosa GAS, Barbosa JS. Association of sleep quality and psychological aspects with reports of bruxism and TMD in Brazilian dentists during the COVID-19 pandemic. J Appl Oral Sci. 2021; 29: e20201089. DOI:10.1590/1678-7757-2020-1089

[32] World Health Organization. Infection prevention and control during health care when COVID-19 is suspected. 2020. https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-2021.1

[33] Tabah A, Ramanan M, Laupland KB, Buetti N, Cortegiani A, Mellinghoff J, Morris AC, Camporota L, Zappella N, Elhadi M, Povoa P, Amrein K, Vidal G, Derde L, Bassetti M, Francois G, Kai NSY, De Waele JJ. Personal protective equipment and intensive care unit healthcare worker safety in the COVID-19 era (PPE-SAFE): An international survey. J Crit Care. 2020; 59: 70-75. DOI:10.1016/j.jcrc.2020.06.005

[34] Ippolito M, Ramanan M, Bellina D, Catalisano G, Iozzo P, Di Guardo A, Moscarelli A, Grasselli G, Giarratano A, Bassetti M, Tabah A, Cortegiani A. Personal protective equipment use by healthcare workers in intensive care unit during the early phase of COVID-19 pandemic in Italy: A secondary analysis of the PPE-SAFE survey. Ther Adv Infect Dis. 2021; 8: 204.993.6121998562. DOI:10.1177/204.993.6121998562

[35] Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Diaz ZM, Wyssmann BM, Guevara SLR, Echeverria LE, Glisic M, Muka T. COVID-19 in health-care workers: A living systematic review and meta-analysis of prevalence, risk factors, clinical characteristics, and outcomes. Am J Epidemiol. 2021; 190 (1): 161-175. DOI:10.1093/aje/kwaa191

[36] Contejean A, Leporrier J, Canouï E, Alby-Laurent F, Lafont E, Beaudeau L, Parize P, Lecieux F, Greffet A, Cheron G, Gauzit R, Fourgeaud J, L'Honneur A, Treluyer J, Charlier C, Casetta A, Frange P, Leruez-Ville M, Rozenberg F, Lortholary O, Kerneis S. Comparing dynamics and determinants of SARS-CoV-2 transmissions among health care workers of adult and pediatric settings in Central Paris. Clin Infect Dis. 2021; 72 (2): 257-264. DOI:10.1093/cid/ciaa977

[37] Lan F-Y, Filler R, Mathew S, Buley J, Iliaki E, Bruno-Murtha LA, Osgood R, Christophi CA, Fernandez-Montero A, Kales SN. COVID-19 symptoms predictive of healthcare workers' SARS-CoV-2 PCR results. PLoS One. 2020; 15 (6): e0235460. DOI:10.1371/journal.pone.0235460

[38] Sikkema RS, Pas SD, Nieuwenhuijse DF, O'Toole A, Verweij J, Linden A, Chestakova I, Schapendonk C, Pronk M, Lexmond P, Bestebroer T, Overmars RJ, Nieuwkoop S, Bijllaardt AG, Bentvelsen RG, Rijen MML, Buiting AGM, Oudheusden AJG, Diederen BM, Bergmans AMC, Koopmans MPG. COVID-19 in health-care workers in three hospitals in the south of the Netherlands: a cross-sectional study. Lancet Infect Dis. 2020; 20 (11): 1273-1280. DOI:10.1016/S1473-3099(20)30527-2

[39] Tengilimoğlu D, Zekioğlu A, Tosun N, Işık O, Tengilimoğlu O. Impacts of COVID-19 pandemic period on depression, anxiety and stress levels of the healthcare employees in Turkey. Leg Med. 2021; 48: 101811. DOI:10.1016/j.legalmed.2020.101811

How to cite this article: Bağcı N, Pamukçu U, Peker İ. Depression Anxiety Stress Levels of Dentists Redeployed to Filiation due to the COVID-19 Pandemic. Clin Exp Health Sci 2023; 13: 418-425. DOI: 10.33808/clinexphealthsci.1139507