

Anxiety and work overload perception levels of primary healthcare professionals during the COVID-19 pandemic

İrem Yiğit^a and Filiz Özkan^{b,*}

^a*Kayseri Mustafa Kızıklı Family Health Center, Kayseri, Turkey;*

E-mail: iremm.ygitt@gmail.com, ORCID ID: 0000-0002-0151-3532.

^b*Department of Public Health Nursing, Faculty of Health Sciences, Erciyes University, Kayseri, Turkey;*

E-mail: filizozkan@erciyes.edu.tr, ORCID ID: 0000-0002-7286-3548.

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Abstract.

BACKGROUND: The coronavirus disease (COVID-19) has greatly affected healthcare workers at the physical and psychosocial level. In this process, primary healthcare workers have taken the most active role by taking part in the filiation groups.

OBJECTIVE: This study aimed to determine the anxiety and workload perception level of primary healthcare workers during the COVID-19 pandemic.

METHODS: This was a cross-sectional study. An online survey was conducted among 197 healthcare workers. Personal Information Form, the Coronavirus Anxiety Scale and Work Overload Scale were used as data collection tools in the research. Independent Two-Sample *T*-Test, One-Way Analysis of Variance, Mann-Whitney U test and Kruskal Wallis test were used to evaluate the data. Moreover, the relationships between the scales were evaluated with Pearson correlation analysis and simple regression analysis.

RESULTS: The median total score of the Coronavirus Anxiety Scale of healthcare workers was 3.0, and the mean score of the Work Overload Scale was 37.89 ± 7.47 . It was found that there was a correlation between the Coronavirus Anxiety and the Work Overload Scales and 21.0% of the variance changes in the Work Overload Scale were affected by coronavirus anxiety.

CONCLUSION: It was determined that the level of coronavirus anxiety affects the perception of workload. Therefore, it is recommended that work plans should be made considering this situation.

Keywords: Coronavirus anxiety, COVID-19, healthcare workers, primary care, workload

1. Introduction

The coronavirus (COVID-19) pandemic continues to affect the environment, human health, the education system and the global economy as a serious

public health problem [1]. During the COVID-19 pandemic, it was also reported that there was an increase in the workload by healthcare workers [2]. In particular, primary healthcare services have been the most active health institutions during the pandemic due to their comprehensive service and easy accessibility [3]. In this process, the duties, authorities, responsibilities and workloads of healthcare workers serving in this field have also changed. Before the pandemic, primary healthcare services

*Address for correspondence: Assoc. Prof. Filiz Özkan, Department of Public Health Nursing, Faculty of Health Sciences, Erciyes University, 38280 Kayseri, Turkey. Tel.: +90 5076800323; E-mail: filizozkan@erciyes.edu.tr.

in Turkey functioned as preventive healthcare services, while after the pandemic, new services related to COVID-19 were added to these services. Unlike hospital services, primary healthcare services provided services during the pandemic such as detecting COVID-19 cases, providing filiation (phone call, record keeping, controlling the patient during the quarantine process, drug supply, follow-up of contact cases, travel isolation, referral of the patient in case of symptom development), planning and carrying out vaccinations, using protective equipment and providing trainings on preventive health services for the pandemic [3, 4]. Although there are studies investigating the workload of health personnel working in the hospital and the frontline (emergency, intensive care...), there is no study conducted with primary healthcare workers working outside the hospital [5–7].

During the pandemic, healthcare workers have experienced difficulties in many dimensions as well as the increase in workload. In addition to physical and social difficulties, mental challenges have been one of the other important factors affecting healthcare workers [8]. Mental problems during the pandemic have made healthcare workers vulnerable to the emotional impact of the coronavirus [9]. It has been stated in studies conducted during COVID-19 that the anxiety levels and psychological problems of healthcare workers increased due to the pandemic [10–16].

Although there are many reasons for the increased workload during the COVID-19 pandemic, it is known that mental problems such as anxiety and depression also affect the workload and reduce the quality of life [17]. This information suggests that anxiety related to coronavirus affects workload. According to the preliminary report of a study conducted in Iran, COVID-19-related workload and mental disorders were found to be significantly higher in healthcare workers who encountered COVID-19 patients [2]. However, besides the absence of studies investigating the workload of primary healthcare workers in the literature, there is no study in the literature that evaluates workload and mental health together.

Working conditions of primary healthcare workers have changed during the pandemic. For this reason, it is thought that anxiety and workload perceptions should be redefined during the pandemic. Defining such information, especially among healthcare workers working in primary care, is extremely important for planning future epidemic/pandemic and prevention strategies (prepare disaster action plans) as well

as ensuring that the process can be improved [18]. Therefore, in the study, it was aimed to determine the anxiety and workload perception of primary healthcare workers during COVID-19 pandemic and to reveal the relationship between them.

1.1. Research Questions

1. What is the workload perception level of healthcare workers working in primary care during the COVID-19 pandemic?
2. What is the coronavirus anxiety level of healthcare workers working in primary care during the COVID-19 pandemic?
3. Is there a relationship between anxiety and workload perception levels of healthcare workers working in primary care?
4. What are the factors affecting the anxiety and workload perception levels of healthcare workers working in primary care?

2. Methods

2.1. Study design and population

This cross-sectional research was conducted using an online questionnaire. The study was conducted from October 1, 2021, to 31, January 2022. The population of the research consisted 1051 physicians, nurses, midwives and health officers working in a province located in the Central Anatolian region of Turkey. The sample of the study was completed with 197 healthcare workers.

The sample of the study was calculated by the average of the workload in the research applied with the sampling method whose population is known, and the reliable samples was found to be at least 123 with 95% confidence and 5% margin of error. Due to the variable number of employees during the COVID-19 pandemic, calculations were made according to the list received from the Provincial Health Directorate on 01/10/2020 (197 people). The population consisted of two institutions and centers affiliated to these two institutions. First, the number of people to be recruited from the two institutions was determined using stratified random sampling method. Then, stratified random sampling was used again to determine the number of people to be recruited from each center. Occupations were not stratified since occupational groups were found equally in the institutions. Using

the simple random method, which is one of the probability sampling methods, the sample was selected from the list of centers by lot method. A substitute participant list was determined for those who were selected and did not participate in the study. This list was made using stratified random sampling and simple random sampling methods. In the *post-hoc* power analysis performed in the G Power 3.1.9.4 program, with statistical test = correlation and effect size = 0.459, $\alpha = 0.05$, the power of the study was found $(1 - \beta) = 0.99$.

Inclusion criteria: Being employed in a Family Health Center or District Health Directorate/Filiation; Being a physician, midwife, nurse and health officer; Being a volunteer (If the person elected by the random method is not a volunteer, random are drawn again).

Exclusion criteria: Working in the institution for less than a month (information about this is given in the online survey and explanation section of the study).

Personal Information Form, Coronavirus Anxiety Scale and Work Overload Scale were used as data collection tools in the research.

The Personal Information Form was prepared by the researcher by using the literature to learn the sociodemographic characteristics and working conditions of the health personnel [19, 20].

The Coronavirus Anxiety Scale (CAS) was developed by Lee as a brief mental health screening to identify possible cases of dysfunctional anxiety associated with COVID-19 [21]. The Turkish validity and reliability study was determined by Biçer et al., and Cronbach's Alpha reliability coefficient of the scale was calculated as 0.832. It is a five-point Likert-type scale. The lowest score obtained from the scale is 0, and the highest score is 20. A score of 9 and above can be interpreted as a high level of anxiety [22]. Besides, the Cronbach's Alpha reliability coefficient in our study was found to be 0.93.

The Work Overload Scale was developed by Duxbury and Higgins in 1994 [23]. The Turkish validity and reliability study was performed by Aycan and Eskin in 2005. The internal consistency of the scale was 0.84. The scale is evaluated with five-point Likert scoring. The lowest score that can be obtained from the scale is 11, and the highest score is 55. As the score obtained from the scale increases, it indicates that the perceived workload of the individual is high and cannot be tolerated [24]. The Cronbach's Alpha reliability coefficient in our study was determined as 0.82.

2.2. Data Collection

To prevent contact and transmission due to the COVID-19 pandemic, the data of the research were collected online via Google Forms. To collect the data, the researcher obtained permission by face-to-face interviews with the district health directors and family health center responsible physicians, and the questionnaires were sent to the healthcare workers identified by the institution. In the online form, a section explaining the purpose and importance of the study was presented to the health personnel and their consent was obtained.

2.3. Evaluation of Data

To evaluate the research data, IBM SPSS Statistics version 26 was used. Descriptive statistics of the data were given as a number (n), percent (%), mean, standard deviation ($x \pm sd$), median (M), 25th percentile (Q1), and 75th percentile (Q3) values. In the data of the Work Overload Scale showing normal distribution, Independent Two-Sample *T*-Test was used for binary variables and One-Way Analysis of Variance was used for Dependent Repeated Measurements for more than two variables. Independent Two-Sample *T*-Test was used to determine the group that made a difference in the One-Way Analysis of Variance for Dependent Repeated Measurements. The Coronavirus Anxiety Scale data that did not show normal distribution were analyzed using Mann-Whitney U test for binary variables and Kruskal Wallis test for more than two variables. The Mann Whitney-U test was used to determine the group that made a significant difference in the Kruskal Wallis test. The relationships between the scales were evaluated by Pearson correlation analysis and simple regression analysis. The significance level was taken as $p < 0.05$.

3. Results

It was determined that the majority of healthcare workers were between the ages of 41–50, female and had a bachelor's degree. In addition, 33.5% of the healthcare workers stated that they were doctors, 53.3% of them worked at the District Health Directorate/Hospital, and 80.2% worked an average of 40–50 hours per week. Furthermore, it was found that the majority of the employees worked outside of working hours, had excessive workload and encountered COVID-19 patients (Table 1).

Table 1
Distribution of Participants by Sociodemographic and Employment Status Characteristics

Sociodemographic characteristics	Number (n)	Percent (%)
Sociodemographic characteristics		
Ages		
18–30	30	15.2
31–40	56	28.5
41–50	70	35.5
51–65	41	20.8
Gender		
Women	125	63.5
Man	72	36.5
Marital Status		
Married	163	82.7
Single	34	17.3
Level of Education		
Health High School	12	6.0
Associate Degree	24	12.2
Undergraduate	112	56.9
Degree	49	24.9
Employment Status Characteristics		
Job		
Physician	66	33.5
Dentist	23	11.7
Nurse	16	8.1
Obstetrician	61	31.0
Medical Officer	31	15.7
Institution		
Family Health Center	92	46.7
District Health Directorate/Filiation	105	53.3
Worked Hours Per Week On Average		
40–50	158	80.2
51–60	22	11.2
61–70	3	1.5
>70	14	7.1
Worked on the Weekend or After 17:00		
Working	123	62.4
Not Working	74	37.6
Degree of Assessment of Workload		
Little	3	1.5
Middle	49	24.9
More	89	45.2
Over	56	28.4
Encountering a COVID-19 Patient at Work		
Encountered	189	95.9
Not Encountered	8	4.1
COVID-19 Disease Transmission Status		
Having COVID-19 Disease	84	42.6
Didn't Have COVID-19 Disease	113	57.4
Total	197	100.0

The answer to the first and second questions of the study, “what is the level of coronavirus anxiety and workload perception level of healthcare workers working in primary care during the COVID-19 pandemic?” is given in Table 2. The mean and standard deviation of the participants’ total score of the Work Overload Scale was 37.89 ± 7.47 , which was observed to be a high-level of workload perception. The median value of the total score of the Coronavirus

Anxiety Scale was observed to be mild anxiety with a median value of 3.0 (Table 2).

The answer to the third questions of the research; “Is there a relationship between anxiety and workload perception levels of healthcare workers working in primary care?” is given in Table 3. The prediction of participants’ Coronavirus Anxiety and Workload was analyzed by simple linear regression analysis. Coronavirus Anxiety explains Work Overload statistically

Table 2
Work Overload Scale and Coronavirus Anxiety Scale Score Distributions

Scale	Median	%25–75	Sd	Mean
Work Overload Scale	–	–	7.47	37.89
Coronavirus Anxiety Scale	3.0	0–8	–	–

Standard deviation (Sd), median (M), 25th percentile (Q1), and 75th percentile (Q3) values.

Table 3
The effect of the Coronavirus Anxiety Scale on the Work Overload Scale

Predictor	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% CI
	B	SE	β			
(Constant)	34.809	0.640		54.406	0.000	33.547 to 36.070
Coronavirus Anxiety Scale	0.620	0.086	0.459	7.205	0.000	0.450 to 0.790

Outcome: Work Overload Scale. Durbin-Watson = 1.900 $F = 51.915$, $p < 0.001$ $R = 0.459$, $R^2 = 0.210$, Adjusted $R^2 = 0.206$ * = $p < 0.05$. Abbreviations: CI, confidence interval; SE, standard error; β , standardized regression coefficient.

and significantly ($F = 51.915$, $p < 0.001$). Moreover, participants' coronavirus anxiety explains 21% of the variance in their levels of Work Overload (R Square = 0.210). A one-unit increase in the Coronavirus Anxiety Scale leads to a 0.620-unit (95% CI, 0.450 to 0.790) increase in the Work Overload Scale (Table 3).

The answer to the fourth question of the study; "What are the factors affecting the anxiety and workload perception levels of healthcare workers working in primary care?" is given in Table 4. It was determined that the difference between age, gender, marital status, occupation, average weekly working hours, overtime working, the degree of workload evaluation, and the situation of encountering a Covid-19 patient at work and Work Overload Scale scores was statistically significant ($p \leq 0.05$). The difference between age and work overload was found to originate in individuals between the ages of 41–50 and 51–65. The difference between marital status and work overload was found to originate in individuals between midwives and health officers. The difference between worked hours per week on average and work overload was found to originate in individuals between those who work 40–50 hours and over 70 hours a week. The difference between degree of assessment of workload and work overload was found to originate in individuals between those who evaluate their workload as low and over (Table 4).

It was determined that the difference between age, gender, education level, workload evaluation degree, encountering a COVID-19 patient at work and the Coronavirus Anxiety Scale scores was statistically significant ($p \leq 0.05$). The difference between age and Coronavirus Anxiety Scale scores was observed

to originate in individuals between the ages of 41–50 and 51–65. The difference between level of education and Coronavirus Anxiety Scale scores was observed to originate in individuals between those who had a health high school and undergraduate education level. The difference between degree of assessment of workload and Coronavirus Anxiety Scale scores was observed to originate in individuals between those who evaluated their workload as low and over (Table 4).

4. Discussion

The answer to the first question of the research, "What is the level of workload perception of healthcare workers working in primary care during the COVID-19 pandemic?". In our study, it was determined that healthcare workers had a workload above the medium level. Similarly, in studies conducted with healthcare workers, the workload level has been found to be high [2, 25, 26]. In our study and similarly in the literature, it was concluded that the workload perception of healthcare workers was high during the COVID-19 pandemic. Furthermore, the fact that 45.2% of the healthcare workers in our study evaluated the workload as much and 28.4% as too much supports this finding. During the COVID-19 pandemic, the new decisions and procedures have greatly affected the workload. In addition to the changing working conditions and difficulties in working life, such as prophylactic measures taken to prevent the spread of the virus, protective clothing, decontamination procedures, isolated private areas where certain materials are stored [27], and factors such as the

Table 4
Workload and Coronavirus Anxiety Scale Score Values of Healthcare workers by Sociodemographic and Work Characteristics

Sociodemographic Characteristics	Work Overload Scale		Coronavirus Anxiety Scale	
	X ± Sd	p	Median	p
Ages				
18–30	37.90 ± 7.12	0.046*	2.0	0.036*
31–40	38.62 ± 6.61		3.0	
41–50**	38.98 ± 8.33		4.0	
51–65**	35.04 ± 6.78		1.0	
Gender				
Women	39.20 ± 7.08	0.001*	4.0	0.003*
Man	35.62 ± 7.65		1.0	
Marital Status				
Married	37.46 ± 7.62	0.001*	3.0	0.320
Single	40.00 ± 6.42		2.0	
Level of Education				
Health High School**	33.33 ± 10.41	0.162	0.0	0.017*
Associate Degree	37.33 ± 6.09		3.0	
Undergraduate**	38.29 ± 7.92		4.0	
Degree	38.38 ± 5.86		2.0	
Employment Status Characteristics				
Marital Status				
Physicians	38.25 ± 6.46	0.030*	4.0	0.199
Dentists	35.39 ± 7.44		2.0	
Nurses	38.37 ± 8.89		3.0	
Health Officers **	39.72 ± 7.59		4.0	
Health Officers **	35.16 ± 7.71		1.0	
Worked Hours Per Week On Average				
40–50**	36.79 ± 7.43	0.001*	4.0	0.161
51–60	42.40 ± 5.01		2.0	
61–70	40.00 ± 10.58		4.0	
>70 **	42.85 ± 6.40		9.3	
Worked on the Weekend or After 17:00				
Working	39.37 ± 7.35	0.000*	2.0	0.902
Not Working	35.44 ± 7.07		3.5	
Degree of Assessment of Workload				
Low**	26.33 ± 7.76	0.000*	0.0	0.000*
Middle	30.77 ± 5.20		1.0	
More	38.43 ± 5.70		3.0	
Over**	43.89 ± 5.65		5.5	
Encountering a COVID-19 Patient at Work				
Encountered	38.15 ± 7.33	0.020*	3.0	0.003*
Not Encountered	31.87 ± 8.88		0.0	

X: Mean; Sd: Standard deviation; p : Significant; *Statistically significant at the 0.05 level, **groups that make a difference.

time devoted to caring for the COVID-19 patient, the severity of the disease, as well as providing emotional support to patients and informing families are also thought to increase the workload [28, 29]. While even different levels of personal protection equipment (PPE) have been found to be effective on physical fatigue, it is thought that changing and increasing duties in primary health care services during the pandemic have been effective in increasing the workload [3, 4, 30].

The second question of the study is “What is the level of coronavirus anxiety of healthcare workers working in primary care during the COVID-19 pandemic?” was discussed. In the present study, it was

determined that healthcare workers experienced mild anxiety about coronavirus (Table 2). In similar studies, the scale score values have been observed to be similar and the coronavirus anxiety level of healthcare workers has been interpreted as low [31, 32]. The role of healthcare workers as a savior in pandemics, the lives recovered despite lost lives, and the presence of patients waiting for recovery motivated healthcare workers to cope with the emotional burden of the pandemic [33]. Besides, it is thought that that healthcare workers have low Coronavirus Anxiety Scale scores because they are at the front lines in the fight against the pandemic, constantly encounter COVID-19 patients and adapt to the pandemic over time. In

our study, it was observed that 95.9% of healthcare workers encountered COVID-19 patients at work and 57.4% of them had COVID-19. This finding supports our interpretation.

The third question of the research is “Is there a relationship between anxiety and workload perception levels of healthcare workers working in primary care?”. In the study, it was found that there was statistically significant relationship between the Coronavirus Anxiety Scale and Work Overload Scale scores. Furthermore, it was determined that 21.0% of the Work Overload Scale variance changes in employees were affected by coronavirus anxiety (Table 3). This situation can be interpreted as that the changing working conditions with the coronavirus will be reflected in the workload. Similarly, in Soeker’s study, healthcare workers expressed concern that the rise in COVID-19 infections would greatly increase their workload and working hours, which would negatively impact their ability to maintain their mental health [34]. Fadhel et al. found that frontline HCWs suffered more from mental health symptoms than non-frontline HCWs, and the difference between the two groups was significant [35]. Moreover, it is thought that employees’ direct encounter with a COVID-19 patient will affect their anxiety levels and workload perceptions. In the study, it was determined that the difference between the situation of encountering a COVID-19 patient at work and the Work Overload Scale scores was statistically significant ($p = 0.020$). The Work Overload Scale scores of those who encountered a COVID-19 patient at work were higher than those who did not (Table 4). Similarly, in a study conducted on midwives in public health facilities, it was determined that the workload perceptions of midwives in the coronavirus period were higher than before the coronavirus [36]. Studies in the literature support the idea that the increase in treatment time allocated to patients with COVID-19 during the pandemic, the lack of special training of healthcare workers for the care of COVID-19 patients, the special treatment needs of patients and the use of protective equipment increase the physical workload [17, 37].

The fourth question of the study is “What are the factors affecting the anxiety and workload perception levels of healthcare workers working in primary care?”. In the study, it was determined that the difference between age and Coronavirus Anxiety Scale scores was statistically significant. It was found that the difference was due to those in the 41–50 age range (Table 4). Similarly, in a study it was determined that

the difference between age and Coronavirus Anxiety Scale scores was statistically significant, and it was found that the difference was caused by the age of 46 and above [38]. This situation makes us think that the anxiety of healthcare workers who were between the ages of 41–50 due to the anxiety caused by the chronic diseases and the fact that people at this age are more likely to get COVID-19, and this situation is reflected in the workload. The statistically significant difference between age and Work Overload Scale scores in the study supports this idea.

In the study, Coronavirus Anxiety and Work Overload Scale scores of women were found to be higher than those of men ($p < 0.05$). In previous studies, it has been found that women had higher Coronavirus Anxiety Scale and Work Overload Scale scores were higher than men’s [20, 39,40]. This is thought to be due to the fact that women maintain their responsibilities at home in addition to their work life, and their roles in working life as well as motherhood and spouse roles. In particular, it is supported in the literature that the burden of balancing the family roles and responsibilities with the working life on the shoulders of women increases the work stress and workload [41].

In the study, it was determined that the difference between the situation of encountering a COVID-19 patient at work and the scores on the Coronavirus Anxiety Scale was statistically significant. The Coronavirus Anxiety Scale scores of those who encountered a COVID-19 patient at work were higher than those who did not (Table 4). This situation suggests that those who encountered a COVID-19 patient had fears of having COVID-19 and infecting their families due to direct contact with the patient, and their anxiety levels increased. Previous studies also support this situation [42]. Moreover, the fact that the difference between the situation of encountering a COVID-19 patient at work and the Work Overload Scale scores was statistically significant makes us think that this anxiety is also reflected in the workload.

In the study, it was determined that the difference between weekly average working hours and Work Overload Scale scores was statistically significant ($p = 0.001$). It was determined that the difference was due to those working 70 hours or more (Table 4). Similarly, it has been reported in studies that the Work Overload Scale score increases as the working time increases [20, 43]. The statistically significant difference between overtime work and Work Overload Scale scores in the study supports this idea

($p = 0.000$). The Work Overload Scale score of those who worked overtime was higher than those who did not work. It is thought that working overtime for healthcare workers increases the perceived workload due to the increase in working hours. The statistically significant differences between the degree of workload evaluation and Work Overload Scale scores and Coronavirus Anxiety Scale scores in the study support this idea.

4.2. Limitations of the Study

The fact that the research covers the central districts of in a city located in the Central Anatolian region of Turkey is among the limitations of the research. Therefore, the research cannot be generalized to the population. The study was conducted on quantitative data and cannot reveal qualitative findings. Face-to-face interaction with the participants could not be achieved and a certain standard was not provided for the duration of the survey.

5. Conclusion

According to the results of the study, it was determined that primary healthcare workers had mild anxiety and had a workload above medium. In the present study, there was a relationship between the Coronavirus Anxiety Scale and the Work Overload Scale and 21.0% variance changes in the Work Overload Scale in employees were affected by coronavirus anxiety.

In line with the results of the study, plans should be made to reduce the coronavirus anxiety levels of healthcare workers and their workload should be reduced. Healthcare workers who encountered a COVID-19 patient at work and considered their workload to be too much should be considered at risk for coronavirus anxiety and should be provided with mental health services. It is recommended that work plans should be made by considering the coronavirus anxiety level (age, gender, education level, workload assessment degree, encountering a COVID-19 patient at work) and the factors (age, gender, marital status, occupation, region of work, working on weekends or after 17:00 in the evening) that increase the workload perceptions. Further studies should be planned to investigate the coronavirus and other factors affecting the workload.

Ethical approval

The Scientific Research Permit of the Ministry of Health on 20.12.2020 and the approval of the Erciyes University Faculty of Medicine Clinical Research Ethics Committee with decision number 2021/46 on 21.01.2021 were obtained for the study.

Informed consent

In the online form, a section explaining the purpose and importance of the study was presented to the health personnel. Informed consent was obtained from all participants participating in the study.

Conflict of interest

The authors declare that they have no conflict of interests.

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