

# The relationship between nurses fear of COVID-19, professional commitment and tendencies to medical errors

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## Abstract

### Aim

This study was conducted to investigate the relationship between nurses' fear of COVID-19, professional commitment and medical error tendency.

### Methods

This study was use correlational research design with 312 nurses in January-April 2021. Data were collected online using a demographic characteristics questionnaire, the Fear of COVID-19 Scale (FCV-19S), the Professional Commitment Scale (PCS), and the Scale of Tendency to Medical Errors (STME). The study was approved by ethics committee. Number, mean, and standard deviation were used for sociodemographic variables. Participants' FCV-19S, PCS, and STME scores were calculated. The correlations between scale scores were determined using Pearson's correlation coefficient and Spearman correlation analysis.

### Results

Participants had a mean FCV-19S, PCS, and STME score of  $19 \pm 8.17$ ,  $72.21 \pm 13.58$ , and  $4.58 \pm 0.51$ , respectively. FCV-19S scores were weakly and positively correlated with PCS overall score ( $r=0.200$ ,  $p<0.001$ ), "willingness to make an effort ( $r=0.273$ ,  $p<0.001$ )" and "belief in goals and values ( $r=0.115$ ,  $p=0.043$ )" subscale scores. FCV-19S scores were weakly and positively correlated with STME "communication ( $r=0.119$ ,  $p=0.036$ )" subscale score.

### Conclusion

Nurses who feared more about COVID-19 were found to have higher professional commitment, greater willingness to make an effort, and stronger belief in goals and values. Nurses who feared more COVID-19 were less likely to make communication-related medical errors.

**Keywords:** COVID-19, Fear, Professional Commitment, Nurses, Medical Error

## Introduction

Novel Coronavirus disease 2019 (COVID-19) that broke out in China at the end of 2019 has taken hold of the whole world. COVID-19 is a flu-like illness characterized by acute respiratory symptoms. The COVID-19 virus is transmitted directly by respiratory droplets or indirectly by contact with surfaces contaminated by infected respiratory secretions<sup>1,2</sup>. Response to the infection can turn deadly, especially in older people and people with chronic illness and suppressed or weak immune systems. The World Health Organization classified the COVID-19 as a pandemic on 11.03.2020<sup>3</sup>. The coronavirus spread rapidly and caused panic and fear worldwide<sup>1,4</sup>.

As of April 19, 2021, the number of confirmed cases worldwide was 141.057.106, with a total of 3.015.043 deaths. On the same date, the number of confirmed cases in Turkey was 4.268.447, with a total of 35.926 deaths<sup>5</sup>. Nurses have been working tirelessly over the last year in response to the COVID-19 pandemic<sup>6,7</sup>. However, they are physically and emotionally exhausted due to the increased workload and experience fear because they come across grim news about the pandemic and are in constant contact with infected people. Therefore, they worry about contracting the virus

and infecting their loved ones<sup>1,3,8</sup>. This situation may them more likely to provide low-quality care and make more medical errors. Therefore, authorities should evaluate nurses' physical and mental health during the pandemic and take measures to reduce their workload and provide psychological counseling and guidance to help them get through this tough time with as little stress as possible<sup>7,9,10</sup>.

Professional commitment helps healthcare workers overcome the mental strain caused by the pandemic<sup>11,12</sup>. Nurses start developing professional commitment during their undergraduate years and build it up throughout their professional lives. Professional commitment determines how one practices one's profession. Nurses with professional commitment are more likely to be satisfied with their job and remain in the profession. Such nurses tend to provide better care, resulting in increased patient satisfaction<sup>6,13,14</sup>. Professional commitment has three dimensions: (1) willingness to make an effort, (2) maintaining membership, and (3) belief in goals and values<sup>14</sup>. The lower the professional commitment, the lower the care quality. Besides, nurses with low professional commitment experience disinclination and dissatisfaction when it comes to fulfilling their responsibilities, which may translate into less concern for patient safety and

more medical errors<sup>12,14</sup>.

Medical errors are unintentional undesirable situations that healthcare professionals can do during work. Medical errors can occur as a result of incompetence or negligence and cause harm to the patient<sup>15</sup>. Types of medical errors; drug and transfusion applications, hospital infection, patient monitoring and safety, falls and communication related medical errors. The main problem in medical errors is the violation of patient safety by acting against the principle of "Providing benefit, not harming", which is one of the most important ethical principles. Nurses, who are responsible for the conduct of preventive, therapeutic and rehabilitative treatment and care services in health institutions, may tend to make medical mistakes while providing these services. This is because they are primarily responsible for medical practice and care<sup>16,17</sup>. Medical errors occur at any stage of health care and have physical, psychological, social, and economic consequences. Medical errors may be due to ignorance, inexperience, and carelessness. Healthcare professionals who experience burnout, fatigue, and sleep deprivation are more likely to make medical errors<sup>12,18,19</sup>.

To our knowledge, this is the first study to investigate the relationship between nurses' fear of COVID-19 and their professional commitment and tendency to make medical errors.

### Study questions

1. What are the levels of nurses' fear of COVID-19, professional commitment, and their tendency to make medical errors?
2. Is there a relationship between nurses' fear of COVID-19 and professional commitment?
3. Is there a relationship between nurses' fear of COVID-19 and their tendency to make medical errors?

## Methods

### Design

This study was conducted with a correlational design.

### Population and sample

The study population consisted of 163.657 nurses in Turkey<sup>20</sup>. The sample size was calculated using Raosoft Sample Size Calculator 21. The sample size was calculated as 310 nurses using a known population sample size formula at a 95% confidence level, 72% response rate and with a 0.05 sampling error<sup>3</sup>. The study was conducted with 312 nurses who met the inclusion criteria.

### Inclusion criteria

Nurses who met the following criteria were included in the study.

- Actively giving care during the pandemic period
- Not being on leave or on a report during the dates of the research (January-April 2021)
- Using a WhatsApp or social media (Facebook, Instagram, Twitter and e-mail) account
- Voluntarily agree to participate in the study.

### Data collection

The research was conducted between January and April 2021. Data were collected online using a questionnaire (Google Forms). In the study, nurses were reached with the snowball sampling method, which is one of the improbable

sampling methods due to being in the pandemic period. In this way, reference nurses were reached via Whatsapp and other nurses were reached through them. In addition, the researchers made announcements on their social media accounts by stating the purpose and inclusion criteria of the research, and shared a survey link for the participation of those who wanted to participate voluntarily. In the social media accounts, the title of the research, the purpose and the group to be joined were written. Those who accepted to participate in the study were able to access the survey form by clicking on the link added to the account. The first question of the questionnaire started with a question stating whether the participant participated voluntarily or not. Those who checked the "I agree to participate in this study" box could continue to answer the questions, while those who did not check could not access the other questions. No personal data was collected. Participation in the research was based on voluntariness and it was explained to the participants that they could withdraw from the research at any time. No request was made to give or receive any remuneration from the respondents.

### Data collection instruments

The data were collected using a demographic characteristics questionnaire, the Fear of COVID-19 Scale (FCV-19S), the Professional Commitment Scale (PCS), and the Scale of Tendency to Medical Errors (STME).

The demographic characteristics questionnaire: The demographic characteristics questionnaire was based on a literature review conducted by the researchers. The questionnaire consisted of ten items on age, gender, marital status, education, work experience, the number of patients cared per day, monthly total working hours before and during the pandemic, duty, and COVID-19 experience (having tested positive for COVID-19 before).

The Fear of COVID-19 Scale (FCV-19S): It was developed by Ahorsu et al. (2020)<sup>2</sup> and adapted to Turkish by Satici et al. (2020)<sup>22</sup>. The instrument consists of seven items scored on a five-item Likert-type scale ("1 = Strongly disagree," "2 = Disagree," "3 = Neither agree nor disagree," "4 = Agree," and "5 = Strongly agree"). The total score ranges from 7 to 35, which higher scores indicating greater fear of COVID-19. In the validity and reliability study of the scale, the Cronbach alpha value was found to be 0.8222. The Cronbach alpha value in this study was found to be 0.93.

The Professional Commitment Scale (PCS): PCS was developed by Lu et al. (2000) to determine nurses' professional commitment<sup>23</sup>. The instrument consists of 26 items scored on a four-point Likert-type scale "1 = Strongly disagree" to "4 = Strongly agree". The instrument has three subscales: (1) willingness to make an effort, (2) maintaining membership, and (3) belief in goals and values. The instrument was adapted to Turkish by Çetinkaya et al. (2015)<sup>24</sup>. The Turkish version has a Cronbach's alpha of 0.90. The total scale score ranges from 26 to 104. The total "willingness to make an effort" subscale score ranges from 13 to 52. The total "maintaining membership" subscale score ranges from 8 to 32. The total "belief in goals and values" subscale score ranges from 5 to 20. Higher scores indicate higher levels of professional commitment. The scale had a Cronbach's alpha of 0.87 in the present study.

The Scale of Tendency to Medical Errors (STME): It was developed by Özata and Altuncan (2010)<sup>25</sup>. The instrument

consists of 49 items scored on a five-point Likert-type scale “1 = Never” to “5 = Always”. The instrument has five subscales: (1) medication and transfusion, (2) hospital infections, (3) patient monitoring and equipment safety, (4) falls, and (5) communication. The mean score is used for assessment. An increase in score indicates a low tendency to make mistakes. The Cronbach alpha value of the original scale was 0.9525. In this study, the Cronbach alpha value of the scale was found to be 0.98.

**Data analysis**

The data were analyzed using the Statistical Package for Social Sciences (SPSS, v.26) at a significance level of 0.05. Number, percentage, minimum, maximum, mean, and standard deviation were used for sociodemographic data. Skewness and Kurtosis values ( $\pm 2$ ) were used for normality testing. The correlation between scale scores was analyzed using Pearson’s correlation coefficient (normal distribution) and Spearman correlation analysis (nonnormal distribution). The effect of sociodemographic variables on scale scores was analyzed using independent samples t-test (normal distribution) and the Mann-Whitney U test (nonnormal distribution). An Analysis of Variance (ANOVA) (normal distribution) and the Kruskal Wallis test (nonnormal distribution) were used for more than two groups. Group variances were determined using Levene’s test. In the case of equal variances, the Bonferroni test was used for post-hoc multiple comparisons, while the Tamhane post hoc test was used to determine significant differences in the case of unequal variances.

**Ethical considerations**

Prior to the research, ethics committee approval was obtained from the Scientific Publication and Ethics Committee of Ardahan University, dated January 27, 2021 and numbered E-67796128-000-2100002230. Verbal and written consent was obtained from the nurses participating in the study. In addition, permission was obtained from the Ministry of Health before the research. Participants were informed that they had the right to withdraw at any stage of the research.

**Results**

Table 1 accordingly, the mean age of the participants was 28.52 $\pm$ 5.59. The one-month working period before the pandemic was 168 $\pm$ 26.99, and the one-month total working period during the pandemic was 176 $\pm$ 31.55. 70.5% of the participants were women, 51.3% were single, 60.3% had a bachelor’s degree, 35.9% had been nursing for 6-10 years, 40.1% took care of 20 or more patients, 42.9% were both on duty and overtime. In addition, 59.6% of the participants did not experience COVID-19.

Table 2 shows the participants’ FCV-19S, PCS, and STME scale and subscale scores. Participants had a mean FCV-19S score of 19.00 $\pm$ 8.17.

Participants had a mean PCS score of 72.21 $\pm$ 13.58. They had a mean PCS “willingness to make an effort,” “maintaining membership,” and “belief in goals and values” subscale score of 37.36 $\pm$ 9.21, 18.50 $\pm$ 7.10, and 17.00 $\pm$ 3.77, respectively.

Participants had a mean STME score of 4.58 $\pm$ 0.51. They had a mean STME “medication and transfusion,” “hospital infections,” “patient monitoring and equipment safety,” “falls,” and “communication” score of 4.60 $\pm$ 0.51, 4.59 $\pm$ 0.53, 4.54 $\pm$ 0.55, 4.57 $\pm$ 0.58, and 4.61 $\pm$ 0.58, respectively.

**Table 1: Descriptive characteristics of nurses (N=312)**

Variable	Mean (SD)
Age	28.52 (5.59)
Monthly total working hours before the pandemic	168.00 (26.99)
Monthly total working hours during the pandemic	176.00 (31.55)
	n (%)
Gender	
Woman	220 (70.5)
Man	92 (29.5)
Marital status	
Married	152 (48.7)
Single	160 (51.3)
Education (degree)	
High school	29 (9.3)
Associate	57 (18.3)
Bachelor's	188 (60.3)
Master's	38 (12.2)
Work experience (year)	
0-5	161 (51.6)
6-10	112 (35.9)
11-15	22 (7.1)
16-20	9 (2.9)
$\geq 21$	8 (2.6)
The number of patients cared per day	
1-4	53 (17.0)
6-9	62 (19.9)
10-14	44 (14.1)
15-19	28 (9.0)
$\geq 20$	125 (40.1)
Duty	
On-call	67 (21.5)
Shift	111 (35.6)
Mixed	134 (42.9)
Have you ever tested positive for COVID-19? (COVID-19 experience)	
Yes	126 (40.4)
No	186 (59.6)

Table 3 shows the distribution of the participants’ FCV-19S, PCS, and STME scores by according to some descriptive characteristics. It was observed that FCV-19S, STME and sub-dimensions differed significantly according to gender ( $p < 0.05$ ). There was no significant difference in PCS sub-dimensions according to gender ( $p > 0.05$ ).

Participants with a high school degree had a higher PCS “maintaining membership” subscale score ( $p=0.007$ ) but a lower STME “medication and transfusion” subscale score than those with an associate degree ( $p < 0.001$ ). Participants with an associate degree had a higher STME “medication and transfusion” score than those with a high school or bachelor’s degree ( $p < 0.001$ ). Participants with an associate degree had a higher STME “hospital infections” subscale score than those with a high school or bachelor’s degree ( $p=0.032$ ).

**Table 2: Scale Scores**

Scales and Subscales	Min	Max	M ± SD
FCV-19S (7 items)	7.00	35.00	19.00±8.17
Willingness to make an effort (13 items)	13.00	52.00	37.36±9.21
Maintaining membership (8 items)	8.00	32.00	18.50±7.10
Belief in goals and values (5 items)	5.00	20.00	17.00±3.77
PCS (26 items)	26.00	104.00	72.21±13.58
Medication and transfusion (18 items)	1.00	5.00	4.60±0.51
Hospital Infection (12 items)	1.00	5.00	4.59±0.53
Patient Monitoring and Equipment Safety (9 items)	1.00	5.00	4.54±0.55
Falls (5 items)	1.00	5.00	4.57±0.58
Communication (5 items)	1.00	5.00	4.61±0.58
STME (49 items)	1.00	5.00	4.58±0.51

Data are given in mean ± SD and range values, unless otherwise stated. SD: standard deviation. FCV-19S: Fear of COVID-19 Scale. PCS: Professional Commitment Scale. STME: Scale of Tendency to Medical Errors.

**Table 3: Distribution of FCV-19S, PCS, and STME scores by according to some descriptive characteristics (N=312)**

Variables	FCV-19S M ± SD	PCS			STME				
		Willingness to make an effort Mean ± SD	Maintaining membership Mean ± SD	Belief in goals and values Mean ± SD	Medication and transfusion Mean ± SD	Hospital infections Mean ± SD	Patient monitoring and equipment safety Mean ± SD	Falls M ± SD	Communication M ± SD
<b>Gender</b>									
Woman	20.63±7.71	37.55±8.84	18.75±7.17	15.79±3.63	4.67±0.39	4.67±0.41	4.59±0.45	4.63±0.46	4.68±0.44
Man	17.93±8.93	36.93±10.08	19.66±6.93	15.88±4.11	4.43±0.70	4.42±0.73	4.41±0.72	4.42±0.78	4.45±0.80
Test	t: 2.685	t: 0.537	t: -1.024	t: -0.181	U: -3.873	U: -3.547	U: -2.339	U: -2.336	U: -2.539
p-value	<b>0.008</b>	0.592	0.306	0.856	<0.001	<0.001	<b>0.019</b>	<b>0.019</b>	<b>0.011</b>
<b>Education</b>									
High school (1)	18.27±8.31	39.44±8.21	21.86±7.69	15.48±4.03	4.52±0.38	4.57±0.35	4.60±0.39	4.60±0.39	4.60±0.41
Associate (2)	19.84±7.62	36.22±9.89	16.50±7.01	15.38±3.90	4.68±0.50	4.70±0.37	4.69±0.42	4.69±0.42	4.79±0.36
Bachelor's (3)	20.47±8.31	37.18±9.08	19.32±6.91	15.80±3.72	4.57±0.59	4.48±0.61	4.51±0.64	4.69±0.42	4.56±0.66
Master's (4)	17.86±7.95	38.42±9.53	19.32±6.91	16.78±3.58	4.69±0.40	4.60±0.51	4.63±0.55	4.51±0.64	4.65±0.47
Test	F:1.475	F:0.974	F:4.162	F:1.167	χ <sup>2</sup> :16.03	χ <sup>2</sup> :8.819	χ <sup>2</sup> :9.373	χ <sup>2</sup> :6.216	χ <sup>2</sup> :8.013
p-value	0.221	0.405	<b>0.007</b> (1>2)	0.323	<0.001 (1>2,2>3)	<b>0.032</b> (2>1,2>3)	<b>0.025</b> (2>3)	0.102	<b>0.046</b> (2>3)
<b>Work experience</b>									
0-5 year (1)	18.89±7.90	36.44±8.86	19.19±6.77	15.87±3.79	4.67±0.37	4.61±0.45	4.56±0.46	4.54±0.55	4.67±0.58
6-10 year (2)	21.16±8.32	38.07±9.28	19.99±7.43	15.83±3.60	4.49±0.59	4.55±0.58	4.50±0.58	4.54±0.60	4.52±0.64
11-15 year (3)	19.95±8.62	38.04±10.45	14.72±6.67	15.22±4.21	4.56±0.93	4.57±0.92	4.50±0.58	4.60±0.93	4.58±0.93
16-20 year (4)	19.88±8.63	38.04±9.28	18.22±8.19	15.33±4.18	4.76±0.30	4.71±0.37	4.52±0.94	4.80±0.31	4.86±0.22
≥20 year (5)	19.75±8.97	38.87±9.49	14.75±3.41	16.62±4.74	4.70±0.35	4.75±0.29	4.71±0.29	4.57±0.51	4.75±0.31
Test	F:1.287	F:1.247	F:3.406	F:0.271	χ <sup>2</sup> :11.19	χ <sup>2</sup> :4.492	χ <sup>2</sup> :3.592	χ <sup>2</sup> :5.691	χ <sup>2</sup> :8.089
p-value	0.275	0.297	<b>0.01</b> (2>3)	0.897	<b>0.025</b> (3>2)	0.344	0.464	0.223	0.088

Table 3 Cont....

The number of patients cared										
1-4 /day (1)	16.58±7.94	36.01±10.54	20.03±7.39	15.67±4.36	4.58±0.55	4.56±0.58	4.52±0.57	4.56±0.55	4.58±0.69	
5-9 /day (2)	18.03±7.31	35.32±10.00	18.96±6.41	15.58±4.13	4.68±0.62	4.66±0.63	4.59±0.62	4.61±0.64	4.71±0.69	
10-14 /day (3)	18.50±6.28	32.90±8.89	19.93±7.16	14.86±4.38	4.66±0.76	4.64±0.77	4.51±0.82	4.59±0.83	4.60±0.81	
15-19 /day (4)	21.60±7.69	37.89±9.25	18.35±7.59	14.75±3.56	4.78±0.29	4.73±0.41	4.65±0.54	4.71±0.42	4.80±0.42	
≥20 /day (5)	22.18±8.65	40.40±7.20	18.45±7.21	16.57±2.94	4.52±0.33	4.53±0.36	4.52±0.35	4.51±0.42	4.54±0.44	
Test	F:6.485	F:7.643	F:0.708	F:2.659	χ <sup>2</sup> :43.571	χ <sup>2</sup> :31.560	χ <sup>2</sup> :13.833	χ <sup>2</sup> :18.39	χ <sup>2</sup> :27.23	
p-value	<0.001 (5>1)	<0.001 (5>2)	0.578	<b>0.033</b> (5>4)	<0.001(5>1,2,3,4)	<0.001 (1>2)	<b>0.008</b> (5>2,3,4)	<0.001 (5>1,2,3,4)	<0.001 (5>1,2,3,4)	
COVID-19 experience										
Yes	18.46±7.68	35.47±8.39	19.37±6.55	15.23±3.97	4.57±0.52	4.57±0.56	4.53±0.57	4.55±0.60	4.57±0.62	
No	20.79±8.37	38.65±9.54	18.79±7.46	16.21±3.59	4.62±0.51	4.61±0.52	4.55±0.53	4.58±0.56	4.64±0.54	
Test	t:-2.262	t:-3.023	t:0.710	t:-2.258	U:-0.178	U:-0.526	U:-0.825	U:-0.123	U:-0.377	
p	<b>0.012</b>	<b>0.003</b>	0.478	<b>0.025</b>	0.858	0.599	0.409	0.902	0.706	

Bold values indicates significant values. t: Independent samples t-test, U: Mann-Whitney U test, F: One Way ANOVA test, χ<sup>2</sup>: Kruskal Wallis test

Table 4: Correlation matrix among variables (N=312)

Scales and subscales		1	2	3	4	5	6	7	8	9	10	11
1. FCV-19S	r	1										
	p	-										
2. Willingness to make an effort	r	0.273**	1									
	p	<b>p&lt;0.001</b>	-									
3. Maintaining membership	r	-0.032	-0.072	1								
	p	0.568	0.203	-								
4. Belief in goals and values	r	0.115*	0.573**	0.079	1							
	p	<b>0.043</b>	<b>p&lt;0.001</b>	0.162	-							
5. PCS	r	0.200**	0.800**	0.496**	0.708**	1						
	p	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	-						
6. Medication and transfusion	r	0.026	0.049	-0.095	0.166**	0.030	1					
	p	0.647	0.391	0.095	<b>0.003</b>	0.603	-					
7. Hospital Infection	r	0.040	0.037	-0.054	0.133*	0.034	0.901**	1				
	p	0.484	0.517	0.340	<b>0.019</b>	0.554	<b>p&lt;0.001</b>	-				
8. Patient Monitoring and Equipment Safety	r	0.067	0.095	-0.078	0.138*	0.061	0.817**	0.841**	1			
	p	0.235	0.096	0.167	<b>0.015</b>	0.280	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	-			
9. Falls	r	0.065	0.050	-0.072	0.102	0.025	0.809**	0.828**	0.853**	1		
	p	0.255	0.377	0.206	0.073	0.663	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	-		
10. Communication	r	0.119*	0.072	-0.130*	0.107	0.011	0.786**	0.776**	0.803**	0.849**	1	
	p	<b>0.036</b>	0.203	<b>0.022</b>	0.060	0.848	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	-	
11. STME	r	0.069	0.065	-0.093	0.138*	0.034	0.926**	0.934**	0.930**	0.937	0.911**	1
	p	0.221	0.249	0.102	<b>0.015</b>	0.547	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	<b>p&lt;0.001</b>	-

\*Correlation is significant at the 0.05 level (2-tailed). \*\*Correlation is significant at the 0.01 level (2-tailed). FCV-19S: Fear of COVID-19 Scale. PCS: Professional Commitment Scale. STME: Scale of Tendency to Medical Errors.

Participants with an associate degree had higher STME “patient monitoring and equipment safety” ( $p=0.025$ ) and “communication” subscale scores than those with a bachelor’s degree ( $p=0.046$ ).

Participants with 6 to 10 years of work experience had a higher PCS “maintaining membership” but a lower STME “medication and transfusion” subscale score than those with 11 to 15 years of work experience ( $p=0.025$ ).

Participants caring for more than 20 patients per day had a higher FCV-19S score than those caring for less than five patients per day ( $p < 0.001$ ). Participants caring for more than 20 patients per day had a higher PCS “willingness to make an effort” subscale score than those caring for 5 to 9 patients per day ( $p < 0.001$ ). Participants caring for more than 20 patients per day had a higher PCS “belief in goals and values” subscale score than those caring for 15 to 19 patients per day ( $p=0.033$ ). Participants caring for more than 20 patients per day had the lowest STME “medication and transfusion,” ( $p=0.008$ ) “falls,” and “communication” subscale scores ( $p<0.001$ ). Participants caring for 5 to 9 patients per day had a higher STME “hospital infections” subscale score than those caring for 1 to 4 patients per day ( $p < 0.001$ ).

Participants working in shifts had a higher PCS “willingness to make an effort” subscale score than those working on-call ( $p < 0.05$ ).

Participants who had tested positive for COVID-19 before had lower FCV-19S total ( $p=0.012$ ) and PCS “willingness to make an effort” ( $p=0.003$ ) and STME “belief in goals and values” ( $p=0.025$ ) subscale scores than those who had not tested positive for COVID-19 before.

There was a correlation between age and FCV-19S total and PCS “willingness to make an effort” and “maintaining membership” subscale scores ( $p < 0.05$ ).

Table 4 shows the correlation results. Participants’ FCV-19S scores were positively correlated with their PCS total scale and PCS “willingness to make an effort” subscale scores ( $r=0.273$ ,  $p < 0.01$ ). Participants’ FCV-19S scores were positively correlated with their PCS “belief in goals and values” and STME “communication” subscale scores ( $r=0.115$ ,  $p < 0.05$ ). There was a negative correlation between PCS “maintaining membership” and STME “communication” subscale scores ( $r=0.119$ ,  $p < 0.05$ ). Participants’ PCS “belief in goals and values” subscale scores were positively correlated with their STME “medication and transfusion,” ( $r=0.166$ ,  $p < 0.01$ ) “hospital infections” and “patient monitoring and equipment safety” subscale scores ( $r=0.841$ ,  $p < 0.01$ ).

## Discussion

In this study, in which the relationship between fear of COVID-19 in nurses and professional commitment and tendency to make medical mistakes was investigated, it was determined that there was a positive and significant relationship between fear of COVID-19 and professional commitment scale. It was observed that there was a positive and significant relationship between fear of COVID-19 and willingness to make an effort, which are sub-dimensions of the professional commitment scale, and belief in goals and

values. In addition, it was determined that there was a positive and significant relationship between the fear of COVID-19 and the communication sub-dimension of the tendency to make medical mistakes. When the literature was reviewed regarding fear of COVID-19, professional commitment and medical error tendency, no study was found that addressed these three scales together. Nursing is one of the professions most affected by the pandemic, which has negatively affected many countries physically, socially, psychologically and economically in the 21st century. In this period, the increased workload of nurses due to the pandemic, the fear of COVID infection and transmission may cause them to leave their profession or make medical errors while performing their services. From this point of view, our study contributes to the literature by revealing the relationship between the fear of COVID, professional commitment and the tendency to make medical errors.

The COVID-19 pandemic has had a major impact on our lives. Despite national and international preventive measures, the virus spread rapidly around the world, causing millions of infections, resulting in hundreds of thousands of deaths. To date, there is no medicine for COVID-19. Another threat to global public health is the amplification of misinformation regarding vaccines on social media. On top of all those challenges, healthcare professionals also have to deal with physical and mental problems because they are in constant contact with infected people, and therefore, they are worried about contracting the virus and infecting their loved ones. In short, the pandemic has taken a tremendous physical and mental toll on healthcare professionals, leaving them face to face with fear and stress<sup>1,4,7,27,28</sup>.

In this study, it was determined that nurses’ fear of COVID-19 was moderate. Contrary to our research, in the study conducted with frontline nurses in China in 2014, it was reported that the fear of COVID is high, and that burnout, depression, anxiety and fear negatively affect the mental health of nurses in relation to each other<sup>4</sup>. In a study conducted with 314 frontline nurses in Arabia, it was reported that the level of fear was high and that fear and stress were related to each other<sup>8</sup>. The difference of these results from our study is thought to be due to the fact that they were conducted directly with nurses who care for COVID-19 patients. In studies conducted in the Philippines and Turkey, it has been reported that nurses’ fear of COVID-19 is moderate, similar to our study<sup>28,29</sup>.

However, it is a great challenge for them. Kheirandish (2020) reported that nurses were mostly worried about contracting the virus and infecting their loved ones or other patients<sup>3</sup>. Nurses are expected to overcome this fear and protect themselves against the virus while providing care and treatment.

In our study, it was determined that the COVID-19 fear scores were significantly higher in women, those who had more than twenty patients who had daily care, and those who had not experienced COVID-19. In addition, a positive relationship was found between age and fear of COVID-19. It was observed that the scores did not differ significantly according to the education level and the period of experience in the profession. In a study, it was reported that, contrary to our study, the COVID-19 fear scores did not differ according to gender, but differed according to age, similar to our study. In the same study, it was reported that participants who received training on COVID-19

experienced a significantly higher rate of fear of COVID-19 than those who did not<sup>29</sup>. It can be thought that this situation is due to the fact that individuals who receive education are more aware of the seriousness of the infectious disease. In a study conducted with 100 executive physicians and nurses, women's psychological, somatic, social and economic phobia sub-dimensions were evaluated with a scale other than the COVID-19 fear scale used in our study, and it was reported that their fear of COVID-19 was high. It has been reported that the fear of COVID-19 is higher in nurses than in physicians, and the fear of COVID-19 decreases as the level of education increases<sup>30</sup>.

The challenges brought about by the pandemic have taken a toll on nurses' professional commitment, which is affected by the increased workload, long shifts, stress, and disrupted social relationships<sup>9,28</sup>. Our participants had an above-average professional commitment (Table 2), which has also been reported by earlier studies<sup>9,12</sup>. Professional commitment is one's attitude, belief, and behavioral intention toward one's job<sup>9,12,31,32</sup>. People with low professional commitment are more likely to leave their profession<sup>9,28,31</sup>.

There was no significant difference in professional commitment levels between male and female participants, which has also been reported by earlier studies<sup>12,13,33</sup>. However, unlike our results, Mersin, al. (2020) reported that women had more professional commitment than men<sup>34</sup>.

In our study, it is seen that professional commitment scores differ according to education (Table 3). Many studies support our research in this sense<sup>9,12,13,24</sup>. Contrary to our research, it was reported in a study that the occupational addiction of the participants did not differ according to the level of education<sup>35</sup>. Participants with 6 to 10 years of work experience had a higher PCS "maintaining membership" subscale score than those with 11 to 15 years of work experience (Table 3). Uysal and Karakurt (2020) found a correlation between work experience and PCS "willingness to make an effort" subscale scores<sup>12</sup>.

Professional commitment helps nurses overcome work-related problems and feel gratification in their professional life, resulting in patient satisfaction and safety. It also encourages them to fulfill their responsibilities and duties as members of the healthcare system<sup>9,14,31,36,37</sup>. Low professional commitment paves the way for patient safety violations, such as falls, medication errors, wrong interventions, misreporting, delayed care, etc. In other words, as professional commitment increases, the tendency to make medical errors decreases<sup>12,14</sup>. In this sense, our study is similar to the studies in the literature. In our study, it was determined that there was a high level of positive correlation between professional commitment and the tendency to make medical mistakes. In our study, it was observed that there was a weak positive correlation between PCS "belief in goals and values" sub-dimension and STME "patient monitoring and equipment safety". The result of our study is similar to the literature<sup>12</sup>.

In our study, it was determined that the tendency of nurses to make medical errors was low. In this sense, the literature supports our research<sup>38-41</sup>. It can be thought that this is due to the fact that nurses with undergraduate degrees are in the majority. Sweeney, LeMahieu, and Fryer (2017) conducted a survey on medical errors between 1990 and 2014 and reported that the most common errors were related to diagnosis (41.46%) and treatment (30.79%)<sup>19</sup>. Nurses in Turkey are not allowed to diagnose and administer medication without

a physician order. Nurses administer medications and treatments prescribed by physicians, except in emergencies. They act in accordance with the verbal medical orders of attending physicians in unexpected situations. They take the necessary measures for patient and staff safety<sup>42</sup>.

It is seen that many reasons such as insufficient number of nurses, insufficient care in care, heavy workload, short time allocated for each patient, high number of caregivers increase the probability of making medical errors<sup>38</sup>. In a study, it was determined that the factors causing medical errors were insufficient number of nurses (93.2%), excessive workload (92.3%), excessive patient burden (88.6%) and lack of knowledge (87.2%)<sup>43</sup>.

In our study, it was seen that the tendency to make medical errors was affected by gender, education and the number of patients who were cared for. It was observed that the mean of propensity to make medical errors did not differ according to the experience of COVID. In a study conducted with 434 nurses, it was reported that the tendency of nurses to make medical mistakes changed significantly according to their education level, working style and liking the profession, but it was not affected by age, gender, and working time in the profession<sup>41</sup>. In another study conducted with 390 nurses, it was reported that 53.1% of the nurses made medical errors, the tendency to make medical errors was affected by age, gender, working time and working style (working in a day or night shift), and it was not affected by the education level and the unit they worked in<sup>40</sup>. In a study conducted with 237 nurses, it was reported that the tendency to make medical errors is affected by income, working time and the unit worked<sup>39</sup>.

## Limitations

The study had some limitations. It cannot be generalized as it is a cross-sectional study. Culture, place of residence, lifestyle and psychiatric condition of the person can be effective on fear. Similarly, professional commitment may vary. Online data collection may have prevented participants from answering the questions as freely as they would have. Only volunteers were recruited. This was a cross-sectional study that focused only on nurses who were accessible through social media between January and April 2021. Therefore, we could not access nurses who did not have a WhatsApp or e-mail account. Nurses who had or had not had COVID-19 before were included in the study. But their vaccination status was not questioned. It is possible that the fears of those who have been vaccinated have diminished, and that those who have not had their fears persisted. This is an important limitation of the study.

## Conclusion

This study investigated the relationship between nurses' fear of COVID-19, professional commitment and tendency to make medical errors. The results of the study show that there is a weak positive correlation between fear of COVID-19 in nurses and professional commitment and tendency to make medical errors. The results point to a positive correlation between FCV-19S scores and PCS total and PCS "willingness to make an effort" and "belief in goals and values" subscale scores. This result indicates that nurses with a greater fear of COVID-19 are more committed to their job and more willing to make an effort, and believe in goals and values more. The results also show a positive correlation between FCV-19S scores and STME "communication"

subscale scores, suggesting that nurses with a greater fear of COVID-19 are more likely to make medical errors related to communication.

Female nurses have a greater fear of COVID-19 than their male counterparts. Nurses caring for many patients are more afraid of COVID-19 than those caring for few patients. Nurses who have not tested positive for COVID-19 are more scared of COVID-19 than those who have. Older nurses have a greater fear of COVID-19 than younger nurses. Nurses' professional commitment is affected by education, working hours, the number of patients cared per day, duty, and COVID-19 experience.

Future studies should focus on physical and mental problems that nurses have been facing due to increased workload since the onset of the pandemic. In cases of COVID-19 and similar epidemics, both nurses and other healthcare professionals can be negatively affected by this situation, thereby reducing their commitment to the profession and their tendency to make medical mistakes.

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### Conflict of Interest

All authors have contributed to the manuscript and have approved the content of this manuscript. None of the authors has a conflict of interest. We received no funding for this study.

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