

© Gözde Yıldız Daş Geçim,
© Banu Terzi

The Effect on the Work Ability of Intensive Care Nurses of Psychological Distress During the COVID-19 Pandemic: Descriptive and Cross-sectional Study

COVID-19 Pandemi Sürecindeki Psikolojik Sıkıntıların Yoğun Bakım Hemşirelerinin İş Yeterliliklerine Etkisi: Tanımlayıcı ve Kesitsel Çalışma

Received/Geliş Tarihi : 14.04.2023
Accepted/Kabul Tarihi : 10.08.2023

Gözde Yıldız Daş Geçim,
Amasya University Faculty of Health Sciences,
Department of Public Health Nursing, Amasya, Turkey

Banu Terzi (✉),
Akdeniz University Faculty of Nursing, Department of
Fundamentals of Nursing, Antalya, Turkey

E-mail : copurbanu@hotmail.com

Phone : +90 242 227 29 74

ORCID ID : orcid.org/0000-0002-9500-6872

ABSTRACT Objective: This study investigated the effects of psychological distress on the work ability of intensive care nurses during the COVID-19 pandemic in Turkey.

Materials and Methods: The sample size of this descriptive and cross-sectional study was determined to be at least 220 nurses, with a level of significance of 0.05, a confidence interval of 99%, and the ability to represent the population of 80%. The research was completed with 233 nurses. A Participant Information Form, the COVID-19-related Psychological Distress Scale, and the Work Ability Index were used to collect data online using Google Forms and email or social media accounts. In the analysis of data, Pearson and Spearman correlation analysis was used along with descriptive statistics.

Results: A statistically significant positive correlation was found between the nurses' length of time working in the profession and their WAI scores ($r=0.132$, $p=0.043$), and a negative correlation was found with their COVID-19 PDS scores ($r=-0.162$, $p=0.013$). A statistically significant difference was found about WAI total scores in the effect on work ability of the working conditions of the COVID-19 pandemic ($p<0.001$). A statistically significant positive correlation was found between the WAI total score and the COVID-19 PDS sub-section of Doubt ($r=0.128$, $p=0.049$).

Conclusion: It was found that the work abilities and COVID-19 psychological distress levels of intensive care nurses living in Turkey were medium. Correlations were found between nurses' work competency and psychological distress. It is recommended that the many factors affecting work ability and psychological distress be taken under control.

Keywords: Anxiety, COVID-19, work ability, pandemic, psychological distress, doubt, intensive care nurses

ÖZ Amaç: Bu çalışmanın amacı Türkiye'de COVID-19 pandemi sürecindeki psikolojik sıkıntıların yoğun bakım hemşirelerinin iş yeterliliklerine etkisini incelemektir.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel tipteki araştırmada örneklem büyüklüğü; 0.05 yanlışlığı düzeyi, % 99 güven aralığı ve %80 evreni temsil etme yeteneği ile en az 220 hemşire olarak belirlendi ve araştırma 233 hemşire ile tamamlandı. Veriler, "Katılımcı Bilgi Formu", "COVID-19 Psikolojik Sıkıntı Ölçeği" ve "İş Yeterliliği Ölçeği" kullanılarak Google Anket formu ile e posta ya da sosyal medya hesapları üzerinden online toplandı. Verilerin analizinde tanımlayıcı istatistiklerin yanında Pearson ve Spearman korelasyon analizleri yapıldı.

Bulgular: Hemşirelerin meslekte çalışma süreleri ile İYÖ ($r=0.132$, $p=0.043$) puanı arasında pozitif yönde, COVID-19 PSÖ ($r=-0.162$, $p=0.013$) puanı arasında ise negatif yönde istatistiksel olarak anlamlı ilişki olduğu saptandı. COVID-19 pandemisindeki çalışma koşullarının iş yeterliliğine etkisine İYÖ toplam puanları bakımından istatistiksel olarak anlamlı fark olduğu bulundu ($p<0.001$). İYÖ toplam puanı ile COVID-19 PSÖ Şüphesi ($r=0.128$, $p=0.049$) alt boyut puanı arasında pozitif yönde istatistiksel olarak anlamlı ilişki olduğu belirlendi.

Sonuç: Türkiye'de yaşayan yoğun bakım hemşirelerinin iş yeterliliklerinin ve COVID-19 psikolojik sıkıntı düzeylerinin orta düzeyde olduğu saptandı. Hemşirelerin iş yeterliliği ile psikolojik sıkıntı arasında ilişkiler olduğu bulundu. İş yeterliliği ve psikolojik sıkıntıları etkileyen birçok faktörün kontrol altına alınması önerilmektedir.

Anahtar Kelimeler: Anksiyete, COVID-19, iş yeterliliği, pandemi, psikolojik sıkıntılar, şüphesi, yoğun bakım hemşireleri

Introduction

All over the world, whenever there are outbreaks of disease, natural disasters or war, important responsibilities fall to nurses especially (1). One very special branch of nursing is intensive care nursing, and these nurses work in a physically and psychosocially high risk environment (2). At the same time, the intensive care nurse performs complex duties which include critical situations such as facing unforeseen events, rapid decision making under time stress, and dealing with aggressive relatives (3). In addition to these problems, the Coronavirus pandemic appeared in China and rapidly spread over the whole world, infecting a very large number of people, resulting in a large number of people in need of intensive care, and intensive care nurses taking a major role in treatment and care. This increased their workload and caused intense stress, leaving them at risk of mental health problems such as exhaustion, depression and anxiety (4,5). Studies have shown that the COVID-19 pandemic has increased the risk of mental disorders such as schizophrenia, anxiety, depression and acute stress disorder in both health workers and the general population, leading to an increase in fear of illness, anger, the misuse of alcohol and tobacco, divorce and suicide (6,7). According to a report by the World Health Organization in 2020, there is not enough nursing workforce in the world to maintain universal health (8); the nursing workforce should remain healthy and not be worn out (9). Particularly during COVID-19, it is necessary to evaluate the difficulties experienced by intensive care nurses-working long hours without a break caring for and treating patients, both putting themselves at risk and living with the fear of infecting their families and friends – their workload, their psychological and mental health, and their work ability levels (2,9).

The concept of work ability, which is frequently used in the field of work health, is an important element in work health services, where greater physical and psychosocial working capacity is needed, and the risk of disabling injury and illness is high (2), and is defined as how a person meets work-related difficulties, or in other words the ability of a worker to cope physically and mentally with difficulties at work (10). This concept is an indicator of how well a person's physical, mental, social and interpersonal abilities match their personal capacities, but also of how well they match their work needs and improvement in their working environment and working conditions, job satisfaction, performance, health, knowledge, skill, attitude and motivation with the necessities

of the work they do (10,11). Studies have reported that an intensive care nurse's work ability is affected by factors such as body mass index, age, personal characteristics, physical and mental fatigue, lack of sleep, disappointment, shift working and workload (2,12,13). Inadequate work ability in nurses causes poor quality of life (14), leaving the profession early (15), cardiovascular diseases in obese individuals, an increase in the risk of mental disorders or diseases such as those of the musculo-skeletal system and resulting disability (16). Taking all of these factors into consideration, it is necessary to improve the work ability levels of nurses, because a person whose work ability is high is predicted to be able to continue doing his or her job for longer (17). In a systematic review and meta-analysis study by Romero Sánchez et al. (2022) evaluating the prevalence of the work inadequacy of nurses working in a hospital, it was concluded that in the world in general, approximately one nurse in four working in a hospital had work inadequacy and that there was an imbalance between individual resources and work, and for this reason nurses were at risk of various negative results throughout their working lives (9).

The literature shows that very little is known about work ability in a group of health care personnel who are very much needed throughout the world (2). At the same time, although there are studies on the work ability of intensive care nurses during the COVID-19 pandemic, no studies were found evaluating their work ability and psychological distress together. Thus, this study was aimed at investigating the effects on the work ability of intensive care nurses of psychological distress during the COVID-19 pandemic. It is thought that the conclusions of the research will make a contribution to the literature.

Research Questions

- 1.What are the levels of work ability in intensive care nurses?
- 2.What is the psychological distress on intensive care nurses in the COVID-19 pandemic?
- 3.Is there a correlation between the psychological distress on intensive care nurses in the COVID-19 pandemic and their work ability levels?

Materials and Methods

Type of Study

The study is descriptive and cross-sectional.

Study Design and Sample

The population of this study consisted all of nurses living in Turkey and working in an intensive care unit between March and September 2021, regardless of period of time, when the research was conducted. OpenEpi v. 3, a statistics program available for general use, was used in calculating the size of the sample (<http://www.openepi.com>), and this was found to be at least 220 nurses, for a significance level of 0.05, a confidence interval of 99%, and an ability to represent the population of 80%. The research was completed with 233 nurses who were selected from the population by the non-probability random sampling method, and who participated willingly and voluntarily in the study. The inclusion criteria were working in an intensive care unit, voluntarily and willingly participating in the study, not having a problem with vision or hearing, having access to the internet and actively using social media (Facebook, Instagram or WhatsApp).

Data Collection

After obtaining the necessary permissions and before beginning the research, written and oral approvals were obtained from the nurses who met the inclusion criteria, and data was collected online between March and September 2021. The data collection forms created on Google Forms were sent to the nurses by email or to their social media accounts (Facebook, Instagram or WhatsApp), and they were asked to complete them.

Data Collection Tools

Data was collected using a Participant Information Form created in line with the literature, the COVID-19 Related Psychological Distress Scale (CPDS), and the Work Ability Index (WAI).

Participant Information Form: This form, created by the researchers according to the literature 15 with the objective of determining the participants' personal characteristics, contained questions on age, gender, education level, marital status, place of residence, years of work, length of time working in the intensive care unit, and the effects on physical and mental health of the COVID-19 pandemic.

COVID-19 Related Psychological Distress Scale (CPDS): This scale was developed in 2020 by Feng et al. and Turkish validity and reliability were performed by Ay et al. (18). It measures the level of psychological distress in uninfected people. The scale consists of a total of 14 items, and has two sub-sections, Doubt, and Anxiety or Fear. The items on the scale are of five-way Likert type: 1-I definitely

disagree, 5-I definitely agree. On the original scale, the Cronbach alpha consistency values were as follows: scale total 0.88, Anxiety or Fear sub section 0.74, and Doubt sub-section 0.87. In the present study, these values were 0.81, 0.62 and 0.78 respectively. Higher scores reflect a higher severity of psychological distress (19).

Work Ability Index (WAI): This scale began to be used in 1980 in Finland, and it was developed to prevent problems arising from work or the work environment in 1998 under the leadership of Prof. Juhani Ilmarinen at the Finnish Institute of Occupational Health (20). Turkish validity and reliability were performed by Daş Geçim and Esin (21). The WAI is a Likert type scale with a total of seven items, intended to assess individuals' work load and performance. Possible scores range between 7 and 49. According to the scale's scoring system, a score of 7-27 represents low work ability, 28-36 medium work ability, 37-43 good work ability, and 44-49 excellent work ability. The Cronbach internal consistency value of the original scale is 0.72, and it is 0.67 in the present study. According to the score obtained on the scale, interventions are made to increase an individual's physical or mental or both physical and mental capacities (20,21).

Ethical Approval

During the research, the Helsinki Declaration on Human Rights was followed. Before commencing the research, approval was obtained from Amasya University Non-Interventional Ethics Committee dated 24 March 2021, No. E-10482, and written permission was obtained from the Turkish Health Ministry Pandemic Research Permission Portal.

Statistical Analysis

The program R version 2.15.3 was used for the statistical analyses (R Core Team, 2013). In reporting study data, minima, maxima, means, standard deviations, medians, first quartile, third quartile, frequencies and percentages were used. Conformity of quantitative data to normal distribution was assessed with the Shapiro-Wilk test and graphical inspections. In evaluating variables showing normal distribution between two groups, the independent groups t test was used, in evaluating between more than two groups, one-way variance analysis was used, and if significance was observed, the Bonferroni test was used to determine the source of the significance. In evaluating variables which did not show normal distribution between two groups, the Mann-Whitney test was used; in evaluating between more

than two groups, the Kruskal-Wallis test was used, and when significance was observed, the Dunn-Bonferroni was used to determine the source of the significance. In determining the level of correlation between quantitative variables, Pearson and Spearman analysis was used. In determining the levels of internal consistency of the scale, the Cronbach alpha coefficient was used. Statistical significance was taken as $p < 0.05$.

Results

Participants' General Characteristics

The ages of the nurses in the study ranged from 21 to 49 years (Table 1).

Table 1. Nurses' sociodemographic characteristics		
	Min-Max (Median)	Avg±SD
Age (years)	21-49 (27)	29.39±6.44
Time working in the profession (years)	0.17-30 (4)	7.42±7.23
Time working in intensive care (years)	0.17-24 (3)	5.06±5.20
Number of patients cared for per shift	0-9 (3)	2.78±1.22
	n	%
Gender		
Female	186	79.8
Male	47	20.2
Marital status		
Married	80	34.3
Single	153	65.7
Education		
High school	175	75.1
University	41	17.6
Postgraduate	17	7.3
Children		
Yes	64	27.5
No	169	72.5
Income level		
Very bad	39	16.7
Bad	33	14.2
Medium	153	65.7
Good	8	3.4
Very good	0	0.0
General state of health		
Very bad	117	50.2

Table 1. Continued

	Min-Max (Median)	Avg±SD
Bad	91	39.1
Medium	9	3.9
Good	16	6.9
Very good	0	0.0
Regularly used medication / Chronic illness		
Yes	55	23.6
No	178	76.4
Level of your intensive care unit		
Level 1	10	4.3
Level 2	30	12.9
Level 3	189	81.1
Level 4	4	1.7
Willingness to work in ICU		
Yes	202	86.7
No	31	13.3
Position		
Nurse	197	84.5
Charge nurse	25	10.7
Mentor nurse	4	1.7
Head nurse	3	1.3
Other	4	1.7
Do you think the unit where you work is suitable for its workforce or capacity?		
Yes	132	56.7
No	101	43.3
Shift type		
08-16	40	17.2
08-20	22	9.4
16-08	45	19.3
Other	126	54.1
Satisfaction with work and working conditions		
Yes	61	26.2
No	172	73.8
Effect of COVID-19 pandemic on work satisfaction		
Very bad	5	2.1
Bad	97	41.6
Medium	43	18.5
Good	86	36.9
Very good	2	0.9

Table 1. Continued

	Min-Max (Median)	Avg±SD
Health problem from work or working environment		
Yes	149	63.9
No	84	36.1
Effect of COVID-19 pandemic on physical health		
Very bad	94	40.3
Bad	76	32.6
Medium	35	15.0
Good	27	11.6
Very good	1	0.4
Effect of COVID-19 pandemic on mental health		
Very bad	91	39.1
Bad	109	46.8
Medium	21	9.0
Good	9	3.9
Very good	3	1.3
Effect of COVID-19 pandemic on adequacy of working conditions		
Very bad	92	39.5
Bad	81	34.8
Medium	29	12.4
Good	24	10.3
Very good	7	3.0
Have you had a coronavirus infection?		
Yes	109	46.8
No	124	53.2
Have you had a COVID-19 test?		
Yes	216	92.7
No	17	7.3
COVID-19 test result		
Positive	67	31.0
Negative	149	69.0
Fear of coronavirus infection		
Yes	141	60.5
No	92	39.5
Are you caring for patients with a diagnosis of COVID-19?		
Yes	199	85.4
No	34	14.6

The findings of the research can be grouped under three headings:

Intensive Care Nurses' Work Ability and COVID-19 Psychological Distress Levels:

The nurses scored the following: WAI total score mean 31.41 ± 6.97 (Min. 11 - Max. 47); COVID-19 PDS Anxiety and Fear sub-section score mean 10.06 ± 3.78 (Min. 5 - Max. 25); COVID-19 PDS Doubt sub-section score mean 20.13 ± 5.86 (Min. 7 - Max. 35), and COVID-19 PDS total scale mean 30.18 ± 8.42 (Min. 12 - Max. 60) (Table 2).

Table 2. Nurses' Work Ability and COVID-19 Psychological Distress Scale score means

	No of items	Min-max (Median)	Avg±SD
WAI total	7	11-47 (32)	31.41 ± 6.97
COVID-19PDS Anxiety and Fear	5	5-25 (10)	10.06 ± 3.78
COVID-19 PDS Doubt	7	7-35 (21)	20.13 ± 5.86
COVID-19 PDS total	12	12-60 (30)	30.18 ± 8.42

Correlation Between Intensive Care Nurses' Work Ability and COVID-19 Psychological Distress Levels:

A statistically significant positive correlation was found between the nurses' WAI total score mean and their COVID-19 PDS Doubt sub-section score mean ($r=0.128$, $p=0.049$). A statistically significant positive correlation was found between the COVID-19 PDS total score mean and the Anxiety and Fear and the Doubt sub-sections ($r=0.799$, $p<0.001$; $r=0.922$, $p<0.001$), and a statistically positive correlation was found between the COVID-19 PDS Anxiety and Fear subsection and the Doubt sub-section ($r=0.503$, $p<0.001$) (Table 3).

Factors Affecting The Intensive Care Nurses' Work Ability and their COVID-19 Psychological Distress Levels During The Pandemic

A statistically significant positive correlation was found between the nurses' length of time in the profession and WAI total score ($r=0.132$, $p=0.043$), and a statistically significant negative correlation was found with the COVID-19 PDS total score ($r=-0.162$, $p=0.013$). In other words, it was seen that the level of COVID-19 CPDS decreased as the time spent in the profession increased. A statistically significant difference was found with regard to the nurses' COVID-19 PDS total scores according to their gender ($p<0.001$). It was found that the COVID-19 PDS scores of the males were higher than those of the females (Table 4).

Table 3. Correlation between nurses' Work Ability Index and COVID-19 Psychological Distress Scale

		WAI Total	COVID-19 PDS Anxiety and Fear	COVID-19 PDS Doubt	COVID-19 PDS Total
WAI Total	r	1.000			
	p	-			
COVID-19 PDS Anxiety and Fear	r	0.025			
	p	0.710	-		
COVID-19 PDS Doubt	r	0.128	0.503		
	p	0.049*	<0.001*	-	
COVID-19 PDS Total	r	0.100	0.799	0.922	
	p	0.126	<0.001*	<0.001*	-

r=Pearson correlation analysis
*p<0.05

Table 4. Correlation between nurses' sociodemographic characteristics and Work Ability Index and COVID-19 Psychological Distress Scale

		WAI	COVID-19 PSD
Age (years)	r	0.118	-0.118
	p	0.072	0.072
Time working in the profession (years)	r	0.132	-0.162
	p	0.043*	0.013*
Time working in intensive care (years)	r	0.068	-0.127
	p	0.302	0.054
	N	Avg±SD	Avg±SD
Gender			
Female	186	31.51±7.07	29.12±8.36
Male	47	31.00±6.61	34.38±7.30
Test value(t)		0.448	-3.947
^ap		0.655	<0.001*
Income			
Very bad	39	34 (29, 40)	32 (23, 40)
Bad	33	32 (27, 34)	31 (23, 35)
Medium	153	32 (27, 36)	30 (24, 34)
Good	8	28 (26, 28.5)	39.5 (35, 43.5)
Test value(χ²)		8.178	10.581
^bp		0.042*	0.014*
General health			
Very bad	117	34 (29, 38)	31 (24, 36)
Bad	91	29 (24, 32)	29 (24, 35)
Medium	9	28 (20, 30)	25 (21, 31)
Good	16	36 (28.5, 41.5)	30.5 (29, 42)
Test value(χ²)		40.014	4.429
^bp		<0.001*	0.219

Table 4. Continued			
		WAI	COVID-19 PSD
Regularly used medication / Chronic illness			
Yes	55	29.29±7.16	28.45±8.00
No	178	32.06±6.80	30.72±8.49
Test value(t)		-2.609	-1.752
^ap		0.010*	0.081
Level of your ICU			
Level 1	10	30 (28, 34)	29.5 (26, 33)
Level 2	30	28.5 (25, 34)	30.5 (22, 33)
Level 3	189	32 (28, 37)	30 (24, 36)
Level 4	4	29.5 (24, 36.5)	27.5 (22.5, 33)
Test value(x²)		4.122	1.450
^bp		0.249	0.694
Willingness to work in ICU			
Yes	202	31.91±6.86	30.30±8.18
No	31	28.13±6.86	29.45±9.93
Test value(t)		2.856	0.520
^ap		0.005*	0.604
Position			
Nurse	197	32 (27, 36)	31 (24, 36)
Charge nurse	25	34 (28, 39)	25 (21, 31)
Mentor nurse	4	28.5 (19.5, 31)	29.5 (27, 35.5)
Head nurse	3	40 (37, 42)	36 (20, 49)
Other	4	30 (24.5, 33.5)	27.5 (23, 34.5)
Test value(x²)		10.437	5.695
^bp		0.034*	0.223
Do you think the unit where you work is suitable for its workforce or capacity?			
Yes	132	33.42±6.49	29.92±8.62
No	101	28.77±6.72	30.53±8.18
Test value(t)		5.340	-0.555
^ap		<0.001*	0.580
Satisfaction with work and working conditions			
Yes	61	36.79±5.28	29.18±8.68
No	172	29.50±6.49	30.54±8.32
Test value(t)		7.887	-1.085
^ap		<0.001*	0.279
Effect of COVID-19 pandemic on work satisfaction			
Very bad / Bad	102	31.77±5.98	30.57±8.38
Medium	43	35.86±5.71	30.67±9.04
Good / Very good	88	28.81±7.45	29.50±8.19

Table 4. Continued

		WAI	COVID-19 PSD
Test value(F)		17.136	0.468
^cp		≤0.001*	0.627
Health problem from work or working environment			
Yes	149	29.93±6.75	29.07±8.27
No	84	34.04±6.60	32.17±8.36
Test value(t)		-4.497	-2.737
^ap		≤0.001*	0.007*
Effect of COVID-19 pandemic on physical health			
Very bad	94	31.86±5.24	29.51±7.92
Bad	76	27.58±7.02	28.99±8.49
Medium	35	35.51±7.24	31.17±9.06
Good / Very good	28	35.14±6.46	34.46±7.93
Test value(F)		17.628	3.390
^cp		≤0.001*	0.019*
Effect of COVID-19 pandemic on mental health			
Very bad	91	33 (29, 38)	31 (24, 35)
Bad	109	29 (24, 34)	28 (24, 35)
Medium	21	37 (32, 39)	34 (28, 41)
Good / Very good	12	34 (29.5, 39)	33 (31.5, 38.5)
Test value(x²)		27.953	7.416
^bp		≤0.001*	0.060
Effect of COVID-19 pandemic on adequacy of working conditions			
Very bad	92	31.88±5.54	29.75±9.13
Bad	81	28.05±7.34	28.33±7.20
Medium	29	34.10±6.85	33.62±8.60
Good / Very good	31	36.26±5.70	33.10±7.59
Test value(F)		15.225	4.425
^cp		≤0.001*	0.005*
Have you had a coronavirus infection?			
Yes	109	30.29±7.36	28.71±8.17
No	124	32.39±6.48	31.48±8.44
Test value(t)		-2.309	-2.543
^ap		0.022*	0.012*
Have you had a COVID-19 test?			
Yes	216	32 (27, 36.5)	30 (24, 35.5)
No	17	32 (28, 36)	26 (22, 36)
Test value(z)		-0.224	-0.185
^dp		0.822	0.853

Table 4. Continued

		WAI	COVID-19 PSD
COVID-19 test result			
Positive	67	29.57±6.95	28.52±7.19
Negative	149	32.19±6.86	30.88±8.20
Test value(t)		-2.594	-2.028
^ap		0.010*	0.044*
Fear of coronavirus infection			
Yes	141	30.59±7.09	27.77±7.43
No	92	32.66±6.63	33.88±8.54
Test value(t)		-2.240	-5.781
^ap		0.026*	<0.001*
Are you caring for patients with a diagnosis of COVID-19?			
Yes	199	31.22±6.83	30.18±8.39
No	34	32.53±7.74	30.21±8.67
Test value(t)		-1.015	-0.016
^ap		0.311	0.987
r=Pearson correlation analysis ^a Independent groups t test ^b Kruskal-Wallis test results are given as median (first quartile, third quartile). ^c One-way variance analysis ^d Mann-Whitney U test results are given as median (first quartile, third quartile). ^e p<0.05			

A statistically significant difference was found regarding WAI and COVID-19 PDS total scores according to whether the participants has had a coronavirus infection ($p=0.022$ and $p=0.012$ respectively). The scores of those who had had a coronavirus infection were lower (Table 4). A statistically significant difference was found regarding WAI and COVID-19 PDS total scores according to the test results of participants who had had a COVID-19 test ($p=0.010$ and $p=0.044$ respectively). The scores of those whose test results were positive were lower. A statistically significant difference was found regarding WAI and COVID-19 PDS total scores according to whether they were afraid of being infected by coronavirus ($p=0.026$ and $p<0.001$ respectively). Those who were afraid of coronavirus infection had lower scores (Table 4).

Discussion

In this research, an investigation was made of the effect of psychological distress on intensive care nurses' work abilities during the COVID-19 pandemic.

Work Ability

It was found in the study that the work ability of nurses living in Turkey and working in intensive care units was at a medium level. There are also other studies in the literature which similarly state that nurses' work abilities are at a medium level (21,22). In contrast to the results of our research, Vasconcelos et al. (23) found that nurses' work abilities were low, and in studies with nurses by Milosevic et al. (14) and Rotenberg et al. (12) it was found that nurses' work abilities were at a good level. In international studies, inadequate or low work ability has been correlated with advanced age, female gender, difficulties with place of work, having another job, doing repetitive or monotonous work, inadequate personnel, and various morbidities (22,24). Evaluating work ability is frequently used in work health services, and both helps to improve workers' health, to ensure the continuation of people's ability to work, and for correct measures to be taken, and also allows the determination of which worker needs which work health service, and of whether there is a decline in people's working conditions (25). At the same time, it allows negative

situations for work and workers to be noticed earlier and the necessary measures to be taken, so that its assessment is important (19). According to the literature, studies on work ability among intensive care nurses are insufficient (2). Work ability can be disrupted by such work-related factors as excessive use of muscle strength, lifting and carrying loads, repeated movements, inadequate or wrong standing positions, exposure to accidents related to work or the work environment and the risks which these create, conflicting roles and the lack of opportunity development and recognition in the workplace (23). It was found in this study that intensive care nurses' work abilities were affected by income status, general health level, regularly used medication or chronic illness, willingness to work in intensive care, whether they thought that the work strength or the capacity of the unit where they worked was suitable, their satisfaction with their work or working conditions, the effect of the COVID-19 pandemic on their work satisfaction, experiencing health problems arising from their work or working environment, the state of participants' satisfaction with their work or working conditions, the effect of the COVID-19 pandemic on physical and mental health, and the fear of infection or of infecting others with the coronavirus. It was found in a study by Tuomi et al. (26) that an excessive work load together with symptoms of a high level of stress cause low work ability, and a study by Rostamabadi et al. (2) found that factors such as individual characteristics, illness, tiredness and an excessive work load affected the work ability of intensive care nurses. It has also been found that age is one of the factors reducing work ability both in nurses (15) and in other professions (13). In order to improve the negative factors affecting the skill; It can be recommended to improve the clinical physical environment, to develop and maintain in-service training programs, to make learner-centered education programs, to adopt lifelong learning approaches, and to develop and implement a peer-mentoring system for nurses.

COVID-19 Psychological Distress

The outbreak of COVID-19 has significantly affected the psychological, social and mental health of health workers on the front line, including nurses caring for and treating patients. It is reported in the literature that nurses, who are exposed to infection or the risk of infection and to intense stress, experience stress, anxiety, insomnia and psychosocial problems (27,28). In a study by Da Rosa et al. (4) it was found that the prevalence of emotional distress in nurses was high.

For this reason, it is of great importance to understand the effects of the COVID-19 pandemic on psychological health (29). It was found in our research that the psychological distress levels of intensive care nurses relating to the COVID-19 outbreak were at a medium level. Similarly, Kaçkın et al. (27) found in a study conducted with nurses in Turkey that nurses caring for patients with a diagnosis of COVID-19 were negatively affected both psychologically and socially by the pandemic, and that nurses used short-term coping strategies and needed psychosocial support and resource management. It was found in a study by Zonp et al. (30) that nurses were at a high risk of developing mental health problems during the COVID-19 pandemic. It was found in our study that the intensive care nurses' total COVID-19 PDS scores were affected by factors such as length of time working in the profession, gender, income, health problems arising from work or the work environment, the effect of the COVID-19 pandemic on physical health, and fear of infection or of infecting others with coronavirus. It was also found that the psychological stress levels of male intensive care nurses were higher than those of female nurses. In contrast to these research results, it was found in studies conducted with various different sample groups evaluating psychological distress during the COVID-19 pandemic that the psychological distress of females was higher (31,32).

Correlation between Work Ability and COVID-19 Psychological Distress

It was found in the study that the mean scores on the COVID-19 PDS sub-sections of Anxiety and Fear and Doubt were at a medium level, and that there was a positive correlation between the WAI total score and these sub-sections. In other words, nurses with high work ability are more fear of COVID-19 and experience more anxiety than other nurses. It has been found in the literature that during the COVID-19 pandemic, there was a feeling of not being prepared for the pandemic, emotional distress, anxiety, concern, depression, stress and worry caused by a deterioration in mental health conditions, dissatisfaction with work, and a fear of the workplace being infected because of the number of COVID-19 cases (27,28). It was concluded in a study by Da Rosa et al. (4) that health professionals worried about being infected or infecting their families or others. Sampaio et al. (33) found a positive correlation between the fear of being infected and depression, anxiety and stress, and Said and El-Shafei (34), in a study conducted in Egypt during the pandemic, found that a very stressful

work environment resulted in dissatisfaction with work and a tendency to leave work. Considering all of this, it is an expected result that doubts or worries connected to psychological distress experienced by intensive care nurses in the COVID-19 pandemic should be parallel to their work ability. The COVID-19 pandemic has affected health workers' mental health with increased stress, worry, depressive symptoms and insomnia (28). Also, the COVID-19 pandemic has led to a high incidence of COVID-19 infections in health workers who are on the front line, and a high prevalence of post-infection symptoms (35). The fact that all of these conditions have a negative effect on work ability suggests that low work ability will increase in the pandemic, and that the situation will remain for some time afterwards (9). Also, it is necessary to increase awareness of how important work in the intensive care unit is, and for nurses working in these units who have a heavy work load and are at risk to have work ability and working capacity in accordance with their work demands (2).

Limitations of the research are that the research results can only be generalized to the sample group, and because it was a cross-sectional study, cause and effect relationships cannot be established. Also, the difficulty of contacting the intensive care nurses and the collection of data online during the COVID-19 pandemic are a further limitation of the study.

Conclusion

In the research, it was determined that the work abilities and the COVID-19 psychological distress levels of intensive care nurses living in Turkey were at a medium level. In order to reduce or eliminate factors such as having had coronavirus, length of time working, or general health condition, it is recommended that suitable work health services be implemented. Also, in order to eliminate all physical and mental factors which cause a decline in work strength and performance by reducing work ability in intensive care nurses, the implementation of programs to improve work health is of importance.

Acknowledgements: We wish to thank all the participating ICU nurses.

Ethics

Ethics Committee Approval: Before commencing the research, approval was obtained from Amasya University Non-Interventional Ethics Committee dated 24 March 2021, No. E-10482, and written permission was obtained from

the Turkish Health Ministry Pandemic Research Permission Portal.

Informed Consent: Written permission was obtained from the Turkish Health Ministry Pandemic Research Permission Portal.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: G.Y.D.G., B.T., Design: G.Y.D.G., B.T., Data Collection and Process: G.Y.D.G., B.T., Analysis or Interpretation: G.Y.D.G., B.T., Literature Search: G.Y.D.G., B.T., Writing: G.Y.D.G., B.T.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Labrague LJ, de Los Santos JAA. Fear of Covid-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *Journal of Nursing Management*. 2021; 29:395-403. <https://doi.org/10.1111/jonm.13168>
2. Rostamabadi A, Zamanian Z, Sedaghat Z. Factors associated with work ability index (WAI) among intensive care units (ICUs) nurses. *Journal of Occupational Health*. 2017;59:147-155. <https://doi.org/10.1539/joh.16-0060-OA>
3. Snape J, Cavanagh SJ. Occupational stress in neurosurgical nursing. *Intensive Crit Care Nur*. 1993;9:162-70. [https://doi.org/10.1016/0964-3397\(93\)90022-P](https://doi.org/10.1016/0964-3397(93)90022-P)
4. Da Rosa P, Brow R, Pravecek B, Carotta C, Garcia AS, Carson P, Callies D, Vukovich M. Factors associated with nurses emotional distress during the COVID-19 pandemic. *Applied Nursing Research*. 2021;62:151-502. <https://doi.org/10.1016/j.apnr.2021.151502>
5. Karasu F, Öztürk Çopur E. An Intensive Care Nurse in the Forefront of the Epidemic While Increasing Cases of Covid19: "HEROES IN FRONT-LINE. *Journal of Intensive Care Nursing*. 2020;24:11-14.
6. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y. Clinical features of patients infected with 2019 novel coronavirus in Wuhan. *China Lancet*. 2020; 30183-5. <https://doi.org/10.1016/S0140-6736>
7. Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, Ng CH. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *The Lancet Psychiatry*. 2020; 7(3):228-229. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)
8. World Health Organization. 2020. State of the world's nursing 2020: Investing in education, jobs and leadership. Geneva. Accessed 14.09.2022 <https://apps.who.int/iris/rest/bitstreams/1274201/retrieve>.
9. Romero-Sánchez JM, Porcel-Gálvez AM, Paloma-Castro O, García-Jiménez J, González-Domínguez M.E, Palomar-Aumatell X, Fernández-García E. Worldwide prevalence of inadequate work ability among hospital nursing personnel: A systematic review and meta-analysis. *Journal of Nursing Scholarship*. 2022;54:513-528. <https://doi.org/10.1111/jnu.12749>
10. Ilmarinen J. Work ability: a comprehensive concept for occupational health research and prevention. *Scand J Work Environ Health*. 2009;35:1-5.
11. Ilmarinen J. From work ability research to implementation. *Int J Environ Res Public Health*. 2019;16:2882. <https://doi.org/10.3390/ijerph16162882>

12. Rotenberg L, Griep RH, Fischer FM, Fonseca MdJM, Landsbergis P. Working at night and work ability among nursing personnel: when precarious employment makes the difference. *Int Arch Occup Environ Health*. 2009;82:877-85. doi:10.1007/s00420-008-0383-4
13. van Den Berg T, Elders LA, de Zwart BC, Burdorf A. The effects of work-related and individual factors on the Work Ability Index: a systematic review. *Occup Environ Med*. 2009; 66:211-20. <https://doi.org/10.1136/oem.2008.039883>
14. Milosevic M, Golubic R, Knezevic B, Golubic K, Bubas M, Mustajbegovic J. Work ability as a major determinant of clinical nurses' quality of life. *Journal of Clinical Nursing*. 2011;20:2931-2938. <https://doi.org/10.1111/j.1365-2702.2011.03703.x>
15. Camerino D, Conway PM, Sartori S, Campanini P, Estryn-Béhar M, van der Heijden BJM, Costa G. Factors affecting work ability in day and shift-working nurses. *Chronobiology International*. 2008; 25:425-442. <https://doi.org/10.1080/07420520802118236>
16. Laitinen J, Näyhä S, Kujala V. Body mass index and weight change from adolescence into adulthood, waist-to-hip ratio and perceived work ability among young adults. *Int J Obes*. 2005;29:697-702. <https://doi.org/10.1038/sj.ijo.0802936>
17. Martinez, M. C., Fischer, FM., 2019. Aging and work ability: Reflections on a complex subject. In *International Conference on Healthcare Ergonomics and Patient Safety*. 280-285 Springer, Cham. https://doi.org/10.1017/978-3-30-24067-7_32.
18. Ay T, Oruç D, Özdoğru AA. Adaptation and evaluation of COVID-19 related Psychological Distress Scale Turkish form. *Death Studies*. 2012; 46:560-568. <https://doi.org/10.1080/07481187.2021.1873459>.
19. Tuomi K, Ilmarinen J, Jankola A, Katajarinne L, Tulkki A. Work Ability Index, 2nd revised edition. Finnish Institute of Occupational Health, Helsinki.1998.
20. Das Gecim GY, Esin MN. A self-management programme for work ability and quality of life in nurses aged 45 years and over: A randomized controlled trial. *International Journal of Nursing Practice*. 2021;27: e12963. <https://doi.org/10.1111/ijn.12963>.
21. Abdolizadeh M, Arastoo AA, Ghsemzadeh R, Montazeri A, Ahmadi K, Azizi, A. The psychometric properties of an Iranian translation of the Work Ability Index (WAI) questionnaire. *Journal of Occupational Rehabilitation*. 2012;22:401-408. doi:10.1007/s10926-012-9355-3.
22. Chiu MC, Wang MJJ, Lu CW, Pan SM, Kumashiro M, Ilmarinen J. Evaluating work ability and quality of life for clinical nurses in Taiwan. *Nursing Outlook*. 2007;55:318-326. <https://doi.org/10.1016/j.outlook.2007.07.002>
23. Vasconcelos SP, Fischer FM, Reis AOA, Moreno CRDC. Factors Associated with work ability and perception of fatigue among nursing personnel from Amazonia. *Revista Brasileira De Epidemiologia*. 2011;14:688-697. <https://doi.org/10.1590/S1415-790X2011000400015>
24. Rostamabadi A, Mazloumi A, Foroushan AR. Work Ability Index (WAI) and its health-related determinants among Iranian farmers working in small farm enterprises. *Journal of Occup Health*. 2014;56(6):478-84. <https://doi.org/10.1539/joh.13-0171-OA>
25. Karabel MP. The validity and reliability of Turkish adaptation of work ability index. Sakarya University Medical School Department of Public Health Master Thesis.2019.
26. Tuomi K, Eskelinen L, Toikkanen J, Jarvinen E, Ilmarinen J, Klockars M. Work load and individual factors affecting work ability among aging municipal employees. *Scand J Work Environ Health*. 1991;17:28-34.
27. Kackin O, Cidem E, Sema Aci O. Experiences and psychological problems nurses caring for patients diagnosed with COVID-19 in Turkey: A qualitative study. *The International Journal of Social Psychiatry*. 2020;67:158-167. <https://doi.org/10.1177/0020764020942788>
28. Spoorthy MS, Pratapa SK, Mahant S. Mental health problems faced by healthcare workers due to the COVID-19 pandemic-A review. *Asian Journal of Psychiatry*. 2020; 51: 102119. <https://doi.org/10.1016/j.ajp.2020.102119>.
29. Nazari N, Zekiy AO, Feng LS, Griffiths MD. Psychometric validation of the Persian version of the COVID-19-Related Psychological Distress Scale and association with COVID-19 Fear, COVID-19 anxiety, optimism, and lack of resilience. *International Journal of Mental Health And Addiction*. 2021;20:2665-2680. <https://doi.org/10.1007/s11469-021-00540-z>.
30. Zonp Z, Aktas E, Adigüzel Y. The relationship between psychological distress and well-being among nurses in Türkiye during the COVID-19 pandemic. *J Psy Nurs*. 2022;13:211-218 <https://doi.org/10.14744/phd.2022.90912>.
31. Badahdah A, Khamis F, Al Mahijari N, Al Balushi M, Al Hatmi H, Al Salmi I, Albulushi Z, Al Noomani J. The mental health of health care workers in Oman during the COVID-19 pandemic. *International Journal of Social Psychiatry*. 2021; 67:90-95. <https://doi.org/10.1177/0020764020939596>.
32. Fernandez H, Lord E, Halcomb L, Moxham R, Middleton I, Alananzeh L. Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *Int. J. Nurs. Stud*. 2020;111:103637. <https://doi.org/10.1016/j.ijnurstu.2020.103637>.
33. Sampaio F, Sequeira C, Teixeira L. Nurses' mental health during the Covid-19 outbreak: a cross-sectional study. *Journal of Occupational and Environmental Medicine*.2020; 62:783-787. <https://doi.org/10.1097/JOM.0000000000001987>.
34. Said RM, El-Shafei DA. Occupational stress, job satisfaction, and intent to leave: nurses working on front lines during COVID-19 pandemic in Zagazig City, Egypt. *Environmental Science and Pollution Research*. 2021;28:8791-8801. <https://doi.org/10.1017/s11356-020-11235-8>.
35. Gaber TAK, Ashish A, Unsworth A. Persistent post-covid symptoms in healthcare workers. *Occupational Medicine*. 2021;71:144-146. <https://doi.org/10.1093/occmed/kqab043>.