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Nursing Education and Mental Workload of Academicians During Coronavirus Pandemic

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ABSTRACT

The World Health Organization declared a pandemic for the coronavirus disease in 2020. This disease affected all sectors as well as the education process. The aim of this study is to determine the methods used by universities in nursing education during the coronavirus pandemic process and the effects of these methods on mental workload. All public and private universities in Turkey included in the study. Online questionnaire prepared by the researchers and the NASA-TLX workload index were sent to 1427 nurses' academicians, 292 participants answered the questionnaire. It was found that the most frequently used method in the study was synchronous distance education. Total score of the academicians in the Mental Workload Scale was found to be 63.87±16.25. The effort and performance scores of the academicians using distance education and the frustration and demand for time scores of female academics in the "65 and over" age group were found to be statistically significantly higher. In the study, it was also found that the mean score of the frustration sub-dimension was related to gender, and the mean score of frustration of female academicians was significantly higher than that of men (p=0.050). In this research, it has been determined that distance synchronous education, which is the most frequently used education method during the coronavirus pandemic process, increases the workload and time requirements of academicians.

Koronavirüs Pandemi Sürecinde Hemşirelik Eğitimi ve Akademisyenlerin Zihinsel İş Yükü

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ABSTRACT

Dünya Sağlık Örgütü, 2020 yılında koronavirüs hastalığı için pandemi ilan etti. Bu hastalık tüm süreçlerin yanı sıra eğitim sürecini de etkiledi. Bu çalışmanın amacı, koronavirüs pandemi sürecinde üniversitelerin hemşirelik eğitiminde kullandıkları yöntemleri ve bu yöntemlerin akademisyenlerin zihinsel iş yükü üzerindeki etkilerini belirlemektir. Çalışmaya Türkiye'deki tüm devlet ve vakıf üniversiteleri dahil edildi. Araştırmacılar tarafından hazırlanan çevrimiçi anket ve NASA-TLX iş yükü endeksi 1427 hemşire akademisyene gönderildi. Anketi dolduran 292 katılımcı örneklemi oluşturdu. Çalışmada en sık kullanılan yöntemin senkron uzaktan eğitim olduğu bulundu. Akademisyenlerin mental iş yükü ortalamasının 63.87±16.25 olduğu saptandı. Uzaktan eğitim kullanan akademisyenlerin çaba ve performans puanları ile "65 yaş ve üstü" yaş grubundaki kadın akademisyenlerin hayal kırıklığı ve zamana yönelik talep puanları istatistiksel olarak anlamlı düzeyde yüksek bulundu. Araştırmada ayrıca hayal kırıklığı alt boyut puanı ortalamasının cinsiyet ile ilişkili olduğu ve kadın akademisyenlerin hayal kırıklığı puan ortalamasının erkeklere göre anlamlı düzeyde yüksek olduğu saptandı (p=0.050). Araştırmamızda koronavirüs pandemi sürecinde en sık kullanılan eğitim yöntemi olan uzaktan senkron eğitimin akademisyenlerin iş yükünü ve zaman gereksinimlerini arttırdığı saptandı.

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INTRODUCTION

A novel type of coronavirus disease appeared in Wuhan, China on December 31, 2019, infecting humans and animals, and was named COVID-19 (Aldridge et al., 2020; COVID-19 Response Team, 2020). COVID-19 causes mild symptoms in some individuals; however, it becomes a serious disease that can cause serious respiratory failure, system damage, and mortality in some individuals (Aldridge et al., 2020).

The disease was declared as "pandemic" by World Health Organization because of its spread to all countries throughout the world (Cucinotta & Vanelli, 2020). This has affected the education process along with many other sectors, such as production, consumption, and transportation (Kırmızıgül, 2020).

The Higher Education Council prepared a "New Normalization Guide in the Global Pandemic" in this process for pandemic; and proposed "Reduced Mobility" education to protect the health of students, academicians, and administrative staff (Council of Higher Education, 2020a). In this context, universities also took various decisions about educational processes.

Nursing education provided in Turkey is implemented in the form of theoretical and clinical practice for at least four years and 4600 hours in the Faculty of Nursing, Faculty of Health Sciences, and High School of Health Universities (Mucuk et al., 2021). However, physical distancing measures that were taken to prevent the spread of the COVID-19 pandemic affected nursing education. It has started to use educational technologies and this affected the role of educators of academicians (Şanlı et al., 2021; Leigh et al., 2020), that will affect the mental workloads of academicians.

Mental workload is defined as the mental work needed for the completion of a certain task (Emeç & Akkaya, 2018). According to Hart and Staveland (1988) who developed to National Aeronautics and Space Administration Workload Index (NASA-TLX), mental workload consists of mental, physical, time requirements, effort and disappointment level (Hart & Staveland, 1988). Mental workload also affects the performance and productivity of employees, their social lives, health status, rate of focusing on work, or making mistakes (Akay et al., 2005; Tatlı & Akın, 2017). There are studies in different fields for mental workload (Akça et al., 2020; Delice, 2016; Grier, 2015), but studies on nursing training academics have not been found in the literature. When the literature was reviewed, our study is expected to be the first in determining the effect of the methods used in nursing education at the undergraduate level and their effects on academicians' mental workload during the COVID-19 pandemic. So, this study aims to determine the training methods used in undergraduate nursing education in Turkey during the COVID-19 pandemic, and their effects on the mental workload of academicians. It is thought that the determination of the educational methods used during the COVID-19 pandemic period and the mental workloads of nurse academicians will contribute to the quality of nursing education.

METHODS

Design

This is a cross-sectional study that was conducted between 2020 and 2021 in Turkey.

The Universe and Sampling of the Study

All public and private universities in 81 cities of Turkey were included in the present study. The universe and sampling of the study consisted of 1427 academicians who had titles of professor, associate professor, doctoral students, and research assistant students in all departments providing nursing education in the faculty of these universities. The questionnaire link address was sent to academicians' e-mails, which were obtained from the public web pages of universities, and the Higher Education Council. Th information on the purpose of the study, its duration, and implementation were sent too. Approximately two weeks were given to fill the online questionnaires, and a reminder e-mail was sent

for academicians who did not complete the questionnaires at the end of this period. Finally, 292 academicians completed the questionnaire and returned them to us. The returning rate of the academicians who submitted questionnaires was 20.46%. The returning rate varies between 6% and 73% in online surveys (İnan, 2002).

Data Collection Forms

The multiple-choice data form consisted of 12 questions were created by researchers and addressed socio-demographic data, training methods used in nursing education, and working times and hours. Also, we used the NASA-TLX to determine the mental workload in our study. It can be argued that NASA-TLX involved all features such as reliability, effectiveness, sensitivity, and is more effective than other methods in mental workload measurements (Ocaktan et al., 2021). This scale was developed by Hart and Steveland (1988) and evaluate the mental, physical, time requirements, effort and disappointment levels (Hart & Steveland, 1988). The study determined the sub-factors that are more challenging (Emeç & Akkaya, 2018) by making a binary comparison of six sub-factors. Among these six factors, "effort" refers to how much hard work is required to complete the task; performance refers to the success of the task in achieving the target; "physical demand" refers to the need for physical activity to complete the task, "mental demand" refers to the need for the mental activity required to complete the task, "disappointment " refers to the negative feelings occurring in the employee when completing the task; and the "demand for time" refers to the time pressure in completing the task (Hart & Steveland, 1988). The scale has been used in studies in different fiels, especially in the field of health in Turkey as well as in international studies, (Karadağ & Cankul, 2015; Emeç & Akkaya, 2018; Delice, 2016; Soylu, 2021). In the Turkish studies where the scale was used, the cronbach alpha values of the scale were given.

It was developed by creating 2 sections as rating and weighting to determine the workload. In the first part of NASA TLX, each of the six dimensions, which constitute the perceived workload, is evaluated between 0 (low) and 100 (very high) points. This part is divided into a five-point range from 0 to 100. Six different dimensions are compared in pairs in the second part, and the participant determines the dominant choice between two options. The scores of the participants between 0-10 in 6 different workloads in the first scale were calculated again according to the score of 100. The weight of each workload was calculated in comparisons given in the second scale. To do this, total tally values for each workload factor were found in 15 comparisons. Then, these total values were divided by 15 to calculate the weight of each factor. Then, the score was given to each workload factor in the first scale and the weight value calculated for this factor was multiplied to obtain the total workload value for each factor. After this, workload scores of 6 different factors were added, and the total score of the Mental Workload Scale was obtained. While the original Cronbach alpha internal consistency coefficient of the scale was 0,72, the Cronbach alpha coefficient of the scale for this study was found to be 0,66.

Analysis of Data

The data were analyzed using the SPSS 22.0 package program. Descriptive statistics (numbers, percentages, mean values, and median values), and analytic tests (Mann Whitney U, Kruskal Wallis, and One-Way ANOVA) were used in the analysis of the data. The suitability of the data to normal distribution was evaluated with the Shapiro Wilk Test. The statistical significance level was considered at $p<0.05$.

RESULTS

Demographic Data

A total of 92.5% (n=270) of the participants were female, 50.4% (n=147) were 35-44 years old, and 68.2% (n=199) were married. When the data on academic characteristics among the demographic data were evaluated, it was found that 64% (n=187) of the participants were working at public universities, 68.2% (n=199) were working in the Faculty of Health Sciences, and 52.3% (n=153) were Doctor Faculty Members. The academic working years of 27.4% of the study group (n=80) was 20 years or more. A total of 82.8% of the participants (n=242) said that they performed their educational activities through "distance education" during the COVID-19 pandemic. In this context, the training methods that were most commonly used or planned to be used by participants were synchronous distance education (91.4%), casework (74.7%), written educational materials (72.3%), research assignments (66.1%), and watching videos prepared and published by others (44.9%), asynchronous distance education (37%), self-prepared videos (36.3%), clinical practice training (13%), simulation models (7.9%), and web-based simulation (5.1%). It was also found that training methods, such as interactive games, watching films and analysis, role-play, patient interviews, and examination of research articles were used less frequently than these training methods. It was determined that 67.9% (n=198) of the participants spent most of daily working hours at home, and 22.3% (n=65) worked between 31-40 hours a week. The participants were also asked to specify the time period during which they were most active during the day. In this respect, 79.5% (n=232) said that the most productive time periods were between 12:00 and 16:00, 68.8% (n=201) from 08:00 to 12:00, and 42.8% (n=125) from 16:00 to 20:00, 34.6% (n=101) between 20:00 and 00:00, and 11.3% (n=201) the hours after 00:00. The demographic data of the participants are given in detail in Table 1.

Table 1

Demographic Data

Variable	Group	Number (n)	Percent (%)
Gender	Woman	270	92.5
	Man	22	7.5
Age	21-34	55	18.8
	35-44	147	50.4
	45-54	49	16.8
	55-64	34	11.6
	>64	7	2.4
Marital Status	Single	93	31.8
	Married	199	68.2
Working University	Private University	105	36.0
	Public University	187	64.0
Degree	Professor	46	15.8
	Associate Professor	37	12.7
	Doctor Faculty Member	153	52.3
	Lecturer	39	13.4
	Doctor Research Assistant	17	5.8
Academic Working	Under 1 year	15	5.1
	1-3 years	35	12.0
	4-6 years	35	12.0
	7-9 years	39	13.4
	10-15 years	66	22.6
	16-20 years	22	7.5
	Over 20 years	80	27.4
Unit	Faculty of Health Sciences	199	68.2
	Nursing School	34	11.6
	Faculty of Nursing	59	20.2
Performed Educational Activities	Face-to-face Education	6	2.1
	Distance Education	242	82.8
	Hybrid Education	44	15.1

The environment where the most time is spent during daily working hours *	Home	198	68.0
	University	74	25.4
	Home and University	16	5.5
	Hospital	3	1.0
Weekly Working Hours *	1-10 hours	19	6.5
	11-20 hours	46	15.8
	21-30 hours	59	20.3
	31-40 hours	65	22.3
	41-50 hours	52	17.9
	>50 hours	50	17.2

* A person who left the question blank is not included.

Findings on the Mental Workload Scale

Our analysis showed that the mean total score of the participants in the Mental Workload Scale was found to be 63.87±16.25. When the mean subdimension scores of the scale were examined, the Mental Demand score was 12.52±8.38, Physical Demand was 5.80±6.09, Demand for time was 17.89±8.70, Performance was 8.32±7.51, Effort was 13.98±7.49, and Disappointment was 5.34±7.63 (Table 2).

Table 2

Mental Task Load Scale Total Score and Subdimensions Scores

Subdimensions	(x̄)	Min.	Max.	SS
Mental Demand	12.5	0	33.3	0.4
Physical Demand	5.8	0	30	0.1
Demand for time	17.9	0	33.3	0.7
Performance	8.32	0	33.3	0.5
Effort	14	0	33.3	0.5
Disappointment	5.34	0	33.3	0.6
Total Workload Score	63.9	0	100	6.3

x̄: Mean, Min: Minimum, Max: Maximum, SS: Standart Deviation

It was examined whether there were differences between the Mental Workload Scale and demographic variables in terms of mean total scores. In this respect, significant differences were detected between the groups in terms of gender, title, and educational type variables during the pandemic process (p=0.033, p=0.019, p=0.019, p=0.019, respectively). The results of advanced analyses and binary comparisons made to determine which groups the difference stemmed from and which groups were different in education during the pandemic process are given in detail in Table 3. No significant relations were detected between other demographic variables and mean mental workload scale total scores (p>0.05).

Table 3

Comparison of Mental Workload Scale Total Score and Subdimension Scores According to Demographic Variable

Variable	Grup	Mental Demand		Physical Demand		Demand for time		Performance		Effort		Disappointment		Total Score	
		x̄	p	x̄	p	x̄	p	x̄	p	x̄	p	x̄	p	x̄	p
Gender	Woman	12.89	**0.005***	5.76	0.219*	18.30	**0.006***	8.26	0.541*	13.84	0.159*	5.41	**0.050***	64.49	**0.033***
	Man	7.96		6.24		12.87		9.12		15.63		4.45		56.30	
Age	21-34	13.60	0.604**	5.79	0.262**	16.60	0.782**	8.40	**0.021**** (5>3)	12.14	**0.042***** (5>1)	5.45	0.356**	62.00	0.084**
	35-44	12.69		5.44		18.15		8.25		14.21		5.82		64.59	
	45-54	10.89		7.08		18.58		6.50		13.40		3.78		60.25	
	55-64	12.27		5.27		17.72		9.66		15.52		6.23		66.70	
	>64	12.95		6.85		18.66		15.42		20.09		1.04		75.04	
Marital Status	Single	12.79	0.684*	5.84	0.862*	15.61	**0.003***	9.74	0.075*	13.42	0.358*	5.75	0.720*	63.18	0.713*
	Married	12.39		5.77		18.96		7.66		14.24		5.15		64.20	
University	Private University	11.78	0.184*	5.25	0.460*	17.87	0.862*	9.06	0.402*	14.99	0.086*	5.61	0.960*	64.59	0.572*
	Public University	12.93		6.10		17.90		7.91		13.41		5.19		63.47	
Degree	Professor	11.04	0.481**	6.39	0.691**	19.30	**0.001**** (1>3, 2>3, 2>5, 4>3)	7.89	0.425**	15.62	0.158**	3.30	0.331**	63.56	**0.019**** (2>3, 2>5, 3>4, 3>5)
	Associate Professor	12.52		6.27		21.67		8.63		12.75		6.10		67.96	
	octor Faculty Member	12.31		5.37		16.23		8.86		13.90		5.58		62.28	
	Lecturer	14.92		5.57		20.18		7.67		14.90		5.53		68.80	
	Doctor Research Assistant	12.90		7.52		15.52		5.45		10.78		6.62		58.82	

Academic Working	Under 1 year	14.62	0.787**	6.13	0.055**	19.55	0.224**	6.53	0.919**	11.51	0.252***	2.93	0.791**	61.28	0.157***
	1-3 years	13.16		5.21		19.00		7.80		16.68		6.28		68.17	
	4-6 years	13.37		5.61		15.42		8.99		12.72		6.66		62.80	
	7-9 years	12.18		6.37		16.51		8.82		13.91		3.84		61.65	
	10-15 years	12.21		4.30		17.34		8.38		13.62		6.27		62.14	
	16-20 years	9.78		5.30		17.33		8.30		13.15		4.93		58.81	
	Over 20 years	12.65		7.16		19.46		8.31		14.37		4.88		66.85	
Unit	Faculty of Health Sciences	12.00	0.237**	5.94	0.089**	18.04	0.768**	8.06	0.603**	13.36	0.159**	5.37	0.673**	62.78	0.174**
	Nursing School	13.50		3.76		16.98		8.94		15.92		5.98		65.09	
	Faculty of Nursing	13.71		6.49		17.93		8.85		14.96		4.89		66.85	
Performed Educational Activities	Face-to-face Education	7.11	0.158**	0.77	**0.042**** (2>1, 3>1)	10.44	**0.042**** (3>1)	6.77	**0.025**** (2>3)	9.33	0.319**	4.77	0.577**	39.22	**0.019**** (2>1, 3>1)
	Distance Education	12.71		5.85		17.69		8.75		14.11		5.18		64.31	
	Hybrid Education	12.21		6.19		20.01		6.19		13.98		6.30		64.81	
The environment where the mo time is spe during dai working hours	Home	12.63	0.659**	6.11	0.280**	17.92	0.570**	8.14	0.105**	13.84	0.253**	5.29	0.287**	63.96	0.868**
	University	12.07		5.12		18.54		8.18		13.56		5.77		63.27	
	Home and University	13.87		4.66		15.87		8.91		16.91		4.58		64.83	
	Hospital	7.55		10.00		15.11		20.44		17.33		0.00		70.44	
Weekly Working Hours	1-10 hours	11.08	0.311**	5.05	0.115**	16.49	**0.015**** (3>2, 4>2, 6>1, 6>2)	8.17	**0.030**** (2>6, 4>6, 4>3)	11.75	0.150**	3.50	0.477**	56.07	0.425**
	11-20 hours	13.02		4.53		14.60		8.44		14.31		6.42		61.36	
	21-30 hours	13.67		5.81		18.10		7.88		14.33		5.90		65.72	
	31-40 hours	11.92		5.41		18.45		10.37		15.71		5.71		65.73	
	41-50 hours	13.52		5.73		17.48		7.96		12.48		3.34		63.76	
	>50 hours	10.89		7.92		21.18		6.48		13.98		5.88		64.84	

Also, we analyzed whether there were differences between demographic variables in terms of subdivision score averages. In this respect, it was found that the mean Mental Demand score was related with gender, and the mean mental demand score of women was significantly higher than that of men (p=0.005). No significant relations were detected between other demographic variables and the mean Mental Demand Score (p>0.05) (Table 3).

It was found that the Physical Demand was associated with the type of education in the pandemic process in terms of the mean sub-dimension score, and significant differences were detected between the groups in terms of mean scores (p=0.042). In the advanced analysis and binary comparisons that were made to determine which groups the difference stemmed from and among which groups there were differences, it was found that the mean physical demand score of the participants who provided education with reduced capacity in face-to-face education method was lower than the participants who provided education with distance education and hybrid education method. No significant relations were detected between other demographic variables and the mean Physical Demand score (p>0.05) (Table 3).

Also, it was determined that the mean demand for time score was related with gender, marital status, title, type of education during the pandemic process, and weekly working hours (p=0.006, p=0.003, p=0.001, p=0.042, p=0.015, respectively). In this respect, the mean demand for time score of women and married individuals was higher at significant levels than that of men and single individuals (p=0.006 and p=0.003, respectively). The results of the binary comparisons made to determine which groups the differences stemmed from in terms of the title, type of education during the pandemic process, and weekly working hours variables are given in detail in Table 3. No significant relations were detected between other demographic variables and the mean demand for time score (p>0.05).

Morover, performance subdimension of Mental Workload Scale was related with mean age, type of education in the pandemic, and weekly working hours at statistically significant levels (p=0.021, p=0.025, p=0.030, respectively). In this respect, it was also found that the mean performance score of the participants in “65 years and older” age group was higher at significant levels than the participants in “45-54” age group (p=0.021). Also, the mean performance score of the participants who continued distance education activities was significantly higher than that of participants who performed hybrid education and training (p=0.025). The results of the binary comparisons made to determine which groups the performance score differences stemmed from in terms of weekly working hours variable are given in detail in Table 3.

It was also found that the mean effort subdimension score was associated with age in the sub-dimensions of the Mental Workload Scale. It was found that the mean effort subdimension score of participants in “65 years and older” age group was higher at significant levels than the participants in “21-34” age range (p=0.042). It was also found in the study that the mean disappointment sub-dimension score was associated with gender, and women’s mean disappointment score was significantly higher than that of men (p=0.050). No significant differences were detected between groups in terms of effort and disappointment mean subdimension scores in other demographic variables (p>0.05) (Table 3).

DISCUSSION

This study aims to determine the training methods used in undergraduate nursing education in Turkey during the COVID-19 pandemic, and their effects on the mental workload of academicians. In general, our results identified the changes caused by the COVID-19 pandemic in nursing education, the methods used in Turkey, and the mental workloads brought to academicians by these methods. To the best of our knowledge, our study was the first in determining the techniques employed in nursing education in the pandemic process and its effects on mental workloads of academicians.

Council of Higher Education (CHE), which universities are affiliated to, announced that education and training in universities would be suspended for three weeks in March 2020, and then there would be no face-to-face courses in the spring semester to avoid the spread of the disease after COVID-19 cases in Turkey (CHE, 2020b; CHE, 2020c). CHE then announced in the spring semester of 2021 with the New Normalization Guide that necessary measures could be taken and education was to be performed in applied areas with a reduced number of students (CHE, 2020c). Since nursing education involves applied education and training in theoretical and clinical clinics, it is an area where difficulties are experienced in the pandemic process (Sanli et al., 2021). It was found in our study that nursing education is mostly provided with distance education (82.8%) and synchronously (91.4%) in Turkey (Table 1). In study of Sanli et al. (2021) examined the nursing training provided in the world. Among these countries, Brazil, the United Kingdom, Spain, Hong Kong, and Australia use distance education methods in nursing education during the pandemic process, which is noteworthy and in line with our study results. This finding also showed that distance education is preferred in the theoretical and practical education of nursing students to protect against the COVID-19 pandemic.

Our results showed that nursing academicians work mostly from home for 31-40 hours per week in the pandemic process (Table 1). In a study, Kutanis and Karakiraz (2013) reported that 31.4% of academicians had higher (21 hours and above) course loads; however, Yıldırım and Taşmektepligil (2011) reported that academicians worked for 11-30 hours. However, these studies were conducted before the pandemic, and our study results show that the working hours of academicians were extended during the distance education process. Also, academicians reported that the most productive time they spent at work during the day was between 08:00 and 16:00. These hours are similar to normal working hours (Table 1).

Defining workload is difficult, even Hughes (1999) called as an "immeasurable entity." In our study, the mean mental workload score of academicians was found to be 63.87 (Table 2). Hart (2006) reviewed 550 studies by using NASA-TLX for a period of 20 years; however, no workload score range, which would be considered as low or high, was reported. Then, Grier (2015) reviewed 237 studies by using NASA-TLX to determine a specific reference range. The score range varied between 6.21 and 88.5 in these studies, and it was reported that 80% of them were in 26-68 range. Grier investigated the mean workload scores of drivers with NASA-TLX, and reported that the mean 58 score was higher than 70% of the studies. When this range is taken as the reference value, it can be argued that the mean workload score of academicians is above average. Emeç and Akkaya (2018) examined the average mental workload of doctors with NASA-TLX and reported it as 64, and Hoonakker et al., (2011) reported the mental workload of nurses in intensive care units as 82.8. Compared to these data, the mental workload scores of the academicians who participated in our study were close to the scores of doctors, and lower than those of nurses and metal sector workers (Table 2).

When the mean scores in the sub-factor in our study were evaluated, it was seen that the highest score was in "demand for time", "effort", and "mental performance"; but the lowest score was in "disappointment" (Table 2). The "performance" score was significantly higher in academicians providing distance education ($p<0.05$). According to the study of Sayan (2020), 94.4% of academicians providing distance education were prepared regularly for courses, and 84.4% thought that more educational materials were needed in distance education. With these findings, requirements such as preparing materials for theoretical and applied education, preparing for courses, creating programs for distance education emerged with the transition to distance education, and this caused that the "demand for time", "effort", "mental demand" and "performance" scores of academicians were higher in academicians. NASA-TLX sub-factor measurements were not detected in the literature; however, it was reported in the study conducted by Akça et al. (2020) that the "mental demand" scores of academicians were high, which is similar to our study.

The results of our study showed that the mental demand and disappointment scores of the female academicians were significantly higher than those of males ($p<0.05$). Also, "demand for time" scores were significantly higher in females and married academicians ($p<0.05$) (Table 3). As a result of the study conducted by Delice (2016) and according to the study of Hoonakker et al. (2011), it was reported that female doctors and female nurses had significantly higher "mental demand" scores, which were similar to our findings. In our study, female academicians constituted 92.5% of the participants. In Dikmen and Maden's study (2012), it was found that women were not affected by responsibilities such as cleaning and childcare at home and had responsibilities brought by gender roles, regardless of their academic title, which can be associated with high scores of female academicians in "demand for time", "mental demand", and "disappointment".

The physical demand scores were significantly lower in academicians who provided face-to-face education in our study. Face-to-face education may be expected to be higher because it is performed in a specific educational environment and since it necessitates physical activity during practice or subject narrations; however, the physical demand scores of the academicians who provided hybrid and distance education were higher.

The "performance" and "effort" scores of the academicians who were aged 65 and over were higher than in other age groups in our study (Table 3). Those who were born between 1965 and 1980 are called Generation X (Twenge et al., 2013). Participants who were at and above the age of 65 were in Generation X, and the communication skills and technical knowledge levels of members of this generation are generally limited and less than younger generations (Elmore, 2011). This shows the need for greater performance and effort for nurse academicians in Generation X in using technology in distance education.

CONCLUSION

According to our study, nursing education is mostly performed with distance education in the pandemic period, and academicians who did this spent more efforts in this process, and experienced higher time pressures, efforts, and had mental demand It was also found that female academics felt more time pressure, needed mental activities, and experienced disappointment, which was associated with gender roles in society. It was also determined that nurse academics who were in Generation X spent more performance and effort than their counterparts in other age groups because of the need to use technology in distance education. Being an academic requires mental activity. So, mental workload is a subject that need to be monitored carefully for academicians because it affects work performance, error rates, and health status, causing stress and burnout (Akay et al.,, 2005; Tatlı ve Akın, 2017). As a result of the data we obtained from our research results, because distance education increases the mental workload of academicians; In order to determine the effect of education on the mental workload of academicians, it is recommended to make measurements within the institution, to provide training on the system used and to establish support units, to work in a planned manner during working hours, to prepare appropriate training materials, and to be prepared and planned for the course. For future research, it is recommended to plan studies on the factors causing the need for time, frustration, and performance needs in academicians.

LIMITATIONS

Some researchers believe that using the Repeated Tests Technique is a more appropriate tool in measuring the reliability of scales such as NASA-TLX (Battiste & Bortolussi, 1988). However, this technique was not used for the reliability of the scale used in the study.

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Ethical Approval

The ethics committee permission with the number 2020-300 (09 November 2020) was obtained from the Ethics Committee of Ankara Yıldırım Beyazıt Unıversity for the implementation of the study. The participants who volunteered to participate in the study were provided written information about the study; and their individual permissions were obtained. All information was gathered in line with Helsinki Declaration.

Conflict of Interest

This manuscript has not been published elsewhere. All authors have approved the manuscript and agree with submission. The authors have not conflicts of declare of interest.

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