

Learning Experiences of Nurses Regarding COVID-19 During the Pandemic and Affecting Factors

Hemşirelerin Pandemi Sürecinde COVID-19'a Yönelik Öğrenme Deneyimleri ve Etkileyen Faktörler

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ABSTRACT

Objective: The aim of the study is to determine the learning experiences of nurses regarding COVID-19 during the pandemic and identify the factors influencing these experiences.

Methods: This is a cross-sectional and descriptive study. The study was conducted with 516 nurses working in health institutions in Turkey. The data for the research were collected online using an information form developed by the researchers in February-March 2021, in accordance with the literature.

Results: Of the nurses participating in the study, 83.9% were female, 60.7% were single, 81.98% belonged to Generation Y, and 43.60% had 1-4 years of professional experience. The research findings indicated that nurses relied more on national resources and observational methods to acquire information during the pandemic. It was observed that the high workload and nurse shortage made it challenging for them to implement the knowledge they gained. The nurses' age, professional experience, education level, and the institution they worked for were identified as factors influencing their learning experiences.

Conclusion: It is thought that determining the way nurses follow in the development of their professional knowledge and skills, which learning resources they use, which learning path they prefer, what difficulties they have in applying what they have learned, and the factors affecting their learning experiences will lead to the planning of in-service training activities.

Keywords: Education, continuing, COVID-19, nursing, professional

ÖZ

Amaç: Çalışmada hemşirelerin pandemi sürecindeki, COVID-19'a yönelik öğrenme deneyimleri ve bu deneyimlerini etkileyen faktörlerin belirlenmesi amaçlanmaktadır.

Yöntemler: Çalışma kesitsel ve tanımlayıcıdır. Çalışma Türkiye'de sağlık kurumlarında çalışan 516 hemşire ile gerçekleştirilmiştir. Araştırmanın verileri Şubat-Mart 2021 tarihleri arasında, araştırmacılar tarafından literatür doğrultusunda geliştirilen bilgi formu ile online olarak toplanmıştır.

Bulgular: Çalışmaya katılan hemşirelerin %83,9'u kadın, %60,7'si bekar, %81,98'i Y kuşağıydı, %43,60'ı 1-4 yıllık mesleki deneyime sahipti. Çalışma sonuçları hemşirelerin pandemi sürecinde daha çok ulusal kaynaklardan ve gözlem yoluyla bilgi edindiğini gösterdi. Hemşirelerin iş yükünün fazla olması, hemşire eksikliği nedeni ile öğrendikleri bilgiyi uygulamaya aktarmada güçlük yaşadığı saptandı. Hemşirelerin yaşı, mesleki deneyimi, eğitim düzeyi ve çalıştığı kurumun öğrenme deneyimlerini etkilediği belirlendi.

Sonuç: Hizmet içi eğitim etkinliklerinin planlanmasında hemşirelerin mesleki bilgi ve becerilerinin geliştirilmesinde izledikleri yolun, hangi öğrenme kaynaklarını kullandıklarının, hangi öğrenme yolunu tercih ettiklerinin, öğrendiklerini uygulamada ne gibi zorluklar yaşadıklarının ve öğrenme deneyimlerini etkileyen faktörlerin belirlenmesinin önemli olacağı düşünülmektedir.

Anahtar Kelimeler: COVID-19, eğitim, hemşirelik, profesyonel, sürekli

INTRODUCTION

The COVID-19 pandemic has become a worldwide disaster that has never been experienced before, deeply affecting the health, economic and social systems of all countries. Among these systems, health workers and nurses have been the most affected by the healthcare system. During the pandemic, nurses found themselves managing a disease they had never experienced before, witnessing changes in care procedures. Some nurses took on the responsibility of caring for COVID-19 patients without completing their orientation processes and were exposed to a high risk of infection.¹

According to the report of the Turkish Nurses Association, one of the challenges faced by nurses working to provide qualified and safe care during the pandemic is the obligation to work in unfamiliar units.² Particularly, existing clinics have been closed to meet the needs of COVID-19 patients, and pandemic clinics and hospitals have been established.²⁻⁴ In this process, nurses have been pulled into pandemic clinics, emergency services, and intensive care units; however, there has been insufficient time and training opportunities to work in these units. The uncertainty and lack of preparation for effective work in special units like pandemic clinics and intensive care have led to fear and panic among nurses.²⁻⁶ Additionally, issues such as changes in routine practices, uncertainty about the responsibility for procedures, and the desire of other healthcare workers afraid of infection to delegate tasks to nurses have also arisen.²⁻⁶

During this process, nurses have been under intense stress due to various stressors such as new infection management approaches, the necessity to cope with a lack of personal protective equipment, providing care to infected colleagues, fear of transmitting the infection to family members, and inadequate training and information about the process.⁷⁻⁹ During the pandemic, the psychological burden on nurses was significant. Studies show that the combination of new infection management protocols, insufficient personal protective equipment (PPE), and the emotional strain of caring for infected colleagues led to increased anxiety and fear among nursing staff.⁸ Nurses reported feelings of panic and uncertainty, particularly when taking on responsibilities in high-risk environments without adequate training.⁷⁻¹⁰ This situation necessitates the establishment of appropriate education and support systems for the management of nurses' experiences during this process.^{9,10}

Furthermore, the pandemic has highlighted the need for robust educational frameworks to prepare nurses for emergencies. The literature reveals a significant gap in

studies focusing on nurses' learning experiences during the pandemic and suggests a need for targeted research to inform future educational policies.^{7,11} It is thought that nurses as adult individuals exhibit learning behaviors in line with adult learning principles, and adult learning principles emphasize that nurses, as adult learners, benefit from their experiences and readiness to learn, which could be crucial for adapting to the rapidly changing healthcare environment.^{4,7,12} By understanding nurses' learning experiences during this crisis, healthcare institutions can better formulate in-service training programs that address the specific challenges faced during pandemics.^{7,8,11,12}

Determining the learning experiences of nurses during the pandemic will provide guidance on how hospitals should formulate/plan their training policies in emergency situations. However, when the literature is examined, it is observed that studies on nurses' learning experiences are quite limited. With this perspective the research was carried out to determine the learning experiences of nurses regarding COVID-19 during the pandemic and identify the factors influencing these experiences. It is believed that the data obtained from the study will not only be informative for the pandemic period but will also serve as a guide in planning all in-service training activities.

AIM

It was aimed to determine the learning experiences of nurses regarding the COVID-19 during the pandemic and identify the factors influencing these experiences.

This study addresses the following questions:

- What are nurses' learning experiences in terms of COVID-19?
- Do the learning experiences of nurses differ according to their socio-demographic characteristics?

METHODS

Study Design

This is a cross-sectional and descriptive study.

Population and Study of the Sample

The population of the study consisted of nurses working in medical institutions in Turkey. According to the data of the Ministry of Health within the 2019 Health Statistics Yearbook, there were 198.103 nurses in Türkiye.¹³ Using the OpenEpi sample size calculator application developed by the Centers for Disease Control and Prevention (CDC), the sample size was calculated as at least 500 with a 95% confidence interval and 5% error rate.¹⁴ In the study, there was no sample selection. The data collection process was ended when the targeted sample size was reached. As a result, the study was completed with 516 nurses.

Inclusion criteria:

- Being employed as a nurse in health institutions in Türkiye.
- To fill out the data collection form completely.

Data Collection Tool

Since there is no valid and reliable measurement tool for nurses' learning experiences regarding COVID-19, the data collection form has been developed by the researchers in line with the literature. The online questionnaire form consisted of two sections.

The first section consisted of 11 items questioning participants' sociodemographic data (age, gender, marital status, learning status, etc.).

In the second part of the form, there are 23 items (I) about learning experiences prepared by the researchers in line with the literature.¹⁵⁻²² The learning experiences in terms of COVID-19 were reviewed under the following three titles: 1-Preferred learning materials and learning styles in learning information about COVID-19 (I 1- I 9), 2-Knowledge and skills regarding COVID-19 (I 10- I 16), 3- Difficulties experienced in learning process in terms of COVID-19 (I 17- I 23). Participants evaluate each statement between 1 and 5 points (1-Does not define me at all, 5-Define me very well). Participants' level of agreement with each statement is given in percentages. Before applying the prepared questionnaire form, language and content validity was ensured by taking expert opinion from five experts in the field of nursing. The Davis Technique was utilized in the evaluation of experts' opinions regarding items.²³ To ascertain the coherence of the items and determine the clarity of expressions, experts were requested to rate each item on a scale of 1-4. The number of experts assigning scores of 3 and 4 on the scale was divided by the total number of experts to calculate the Content Validity Index (CVI). Content Validity Indices (CVIs) of items between 0.85 and 1.00 were considered appropriate. It was found that the content validity indexes (CGI) of the items were between 0.85-1.00 and were higher than the generally accepted standard level (0.80 and above). Experts agreed on all scale items. A pilot study (n=20) was conducted with the prepared form. At the end of the pilot study, no changes were made to the form, and the nurses who participated in the pilot study were not included in the study group. The Cronbach alpha value of the created questionnaire was 0.81. Cronbach's alpha value being over 0.7 indicates that the reliability of the data collection tool is at a good level.²⁴

Data Collection

During the COVID-19 pandemic, the data collection tool has

been transferred to an online platform to reach a larger audience. In the first section of the created form, a text was formulated containing the researcher's name, the purpose of the research, its duration, the anticipated number of participants, information that personal data of participants will not be collected, details on how the data obtained from the study will be used, and the methods for storing and destroying the data. Participants were asked whether they agreed to participate in the study. Those who agreed to participate were granted access to the entire data collection tool. Participants who indicated that they did not agree to participate were denied access to the data collection tool. Response submissions were closed to prevent one person from providing multiple responses. Data were collected between February and March 2021. Participants were reached through their social media accounts (Twitter, Instagram, Facebook, Telegram, WhatsApp groups, etc.). The online questionnaire form was shared on the relevant sites, and nurses were asked to complete the form. After achieving the targeted sample number, the online questionnaire was closed.

Statistical Analysis

Statistical Package for the Social Sciences (IBM SPSS Corp., Armonk, NY, USA) version 22 was used to analyze the data. Data analysis was performed using mean, standard deviation, frequency, percentage and Chi-square. The significance level was accepted as <.01.

Ethical Approval

This study was approved by the İstanbul University-Cerrahpaşa Social and Human Sciences Research Ethics Committee (05.01.2021-2020/284). Informed consent for participation was obtained through an online survey. The informed consent section regarding the study was present on the first page of the online survey. Selecting the relevant statement in this section was considered as giving consent, and the form was then opened for access.

RESULTS

In the study, the age of nurses was classified according to generations. Those born between 1965 and 1979 are grouped as the X generation, those born between 1980 and 1994 as the Y generation, and after 1995 as the Z generation.¹³ 81.98% of the participants are in the Y generation and the average age of the nurses is 30.77+8.0 (min:20-max:59) years. 43.60% of the nurses have 1-4 years of experience and the average professional experience is 8.68+8.46 (min: less than 1 year-max: 41) years. The characteristics of the nurses are shown in Table 1 in detail.

Table 1. Nurses' Introductory Characteristics (n=516)

Characteristics		n	%
Avg. Age 30.77±8.0 (min:20-max:59)	Generation X	73	14.15
	Generation Y	423	81.98
	Generation Z	20	3.87
Avg. Professional Experience 8.68±8.46 (min: less 1 year-max: 41)	Less than 1 year	45	8.72
	1-4 years	225	43.60
	5-10 years	80	15.50
	11-15years	57	11.05
Gender	Female	433	83.9
	Male	83	16.1
Marital Status	Single	313	60.7
	Married	203	39.3
Having a child	Yes	164	31.8
	No	352	68.2
Educational Status	High School's Degree	51	9.9
	Bachelor's Degree	318	61.6
	Master's Degree	147	28.5
Place of Employment	State	348	64.7
	Private	90	17.4
	University	78	15.1
Service unit	Service/Inpatient Service	158	30.6
	Intensive Care	138	26.7
	Administrative unit	53	10.3
	Emergency room	42	8.1
	COVID-19 Clinic	42	8.1
	Operating room	33	6.4
	Family health center	19	3.7
	COVID-19 intensive care	15	2.9
Other*	16	3.2	
Change of unit during the pandemic	Yes	238	46.12
	No	278	53.88
Chronic disease history in the family	No	173	33.5
	Himself/herself	5	1.0
	Partner	14	2.7
	1st degree relative	324	62.8
COVID-19 Diagnosis/Treatment	No	358	69.4
	Treatment at home	139	26.9
	Inpatient treatment	19	3.7

*Polyclinic, laboratory, and COVID-19 vaccination unit, Avg; Average, Min; Minumum, max; maximum

Nurses' Learning Experiences during the COVID-19 Pandemic

The results regarding the COVID-19 related learning experiences of nurses during the pandemic are presented in Table 2. *Preferred learning materials and learning styles in learning information about COVID-19* were examined, and results indicated that observations (27.7%), national scientific resources (25.6%), international scientific resources (25%), and guidelines from the Ministry of Health (22.1%) were utilized most.

When nurses' knowledge and skills regarding COVID-19 were examined, it was seen that nurses were most knowledgeable about infection routes (52.7%), symptoms (50.0%) and diagnostic methods (46.5%). Difficulties experienced in learning process in terms of COVID-19 were examined, and results demonstrated that nurses had difficulties practicing what they learned due to heavy workloads (19.6%), an insufficient number of nurses (15.7%), and the uncertainty in the progress of COVID-19 (8.3%). The statement "I did not have sufficient time to gain new information in the COVID-19 pandemic" had the lowest response rate (5.6%).

Comparison of Nurses' Introductory Characteristics and Learning Experiences

There was no significant difference between the gender of the participants and their learning experiences ($P>.01$). A significant difference was found between the age and preferred learning materials and learning styles in learning information about COVID-19 ($P<.01$). It has been determined that the Y generation learns the information about COVID-19 mostly from international scientific resources, and they prefer the observation and trial-and-error method less than the X and Z generations (Table 3).

There was no significant difference between generations in terms of being informed about COVID-19 ($P>.01$). When the difficulties experienced by nurses in the learning process during the pandemic and age are examined, research findings have shown that nurses from Generation Y experienced more difficulties in learning during the COVID-19 process ($P<.01$) (Table 3).

When the findings of the nurses are examined according to their professional experience, it is seen that the nurses working for 1-4 years are more likely to learn about Covid -19 from national and international scientific resources, the Ministry of Health guidelines, and by observing and trial and error method (Table 3).

When the difficulties experienced by nurses in the learning process during the pandemic and professional experience are examined, the nurses working for 1-4 years experienced more difficulties in learning during the COVID-19 process ($P <.01$) (Table 3).

The learning experiences of the nurses regarding the COVID-19 process were compared according to their educational status and the institution they work (Table 4). It has been seen that the nurses who have a bachelor's degree learn the information about COVID-19 mostly from national and international scientific resources, Ministry of Health guidelines and they prefer the observation ($P<.01$).

Table 2. Nurses' Learning Experiences in terms of COVID-19 (n=516)

Learning Experiences	Does not define me at all		Doesn't define me		It kind of defines me		Defines me		Define me at all		
	n	%	n	%	n	%	n	%	n	%	
Preferred learning materials and learning styles in learning information about COVID-19	I 1. I learned the information related to COVID-19 from national scientific resources.	24	4.7	54	10.5	138	26.7	168	32.6	132	25.6
	I 2. I learned the information related to COVID-19 through observation.	46	8.9	57	11.0	110	21.3	160	31.0	143	27.7
	I 3. I learned the information related to COVID-19 from the guidelines of the Ministry of Health.	36	7.0	50	9.7	137	26.6	179	34.7	114	22.1
	I 4. I learned the information related to COVID-19 from international scientific resources.	43	8.3	64	12.4	134	26.0	146	28.3	129	25.0
	I 5. I learned the information related to COVID-19 from references such as social media, TV, or written media.	40	7.8	54	10.5	146	28.3	174	33.7	102	19.8
	I 6. I learned the information related to COVID-19 from the nursing literature and websites.	51	9.9	54	10.5	122	23.6	200	38.8	89	17.2
	I 7. I learned the information related to COVID-19 from training conducted in the institution.	94	18.2	69	13.4	141	27.3	123	23.8	89	17.2
	I 8. I learned the information related to COVID-19 from the WHO website.	115	22.3	86	16.7	137	26.6	112	21.7	66	12.8
	I 9. I learned the information related to COVID-19 through the trial and error method.	223	43.2	89	17.2	89	17.2	72	14.0	43	8.3
Knowledge and skills regarding COVID-19	I 10. I have sufficient knowledge about the ways of infection regarding COVID-19.	5	1.0	5	1.0	37	7.2	197	38.2	272	52.7
	I 11. I have sufficient knowledge about the symptoms of COVID-19.	3	0.6	9	1.7	41	7.9	205	39.7	258	50.0
	I 12. I have general knowledge about COVID-19.	5	1.0	7	1.4	56	10.9	220	42.6	228	44.2
	I 13. I have sufficient knowledge about the diagnostic methods regarding COVID-19.	9	1.7	13	2.5	60	11.6	194	37.6	240	46.5
	I 14. I have sufficient knowledge about the treatment process of COVID-19.	4	0.8	21	4.1	106	20.5	178	34.5	207	40.1
	I 15. I have sufficient skills about the care for a COVID-19 patient	21	4.1	44	8.5	90	17.4	162	31.4	199	38.6
	I 16. I have sufficient knowledge about the care for a COVID-19 patient	16	3.1	46	8.9	96	18.6	176	34.1	182	35.3
Difficulties experienced in learning process in terms of COVID-19	I 17. I had difficulties practicing the information I gained as my workload was heavy.	89	17.2	64	12.4	131	25.4	131	25.4	10	19.6
	I 18. I had difficulties practicing the information I gained owing to the insufficient number of nurses.	110	21.3	93	18.0	124	24.0	108	20.9	81	15.7
	I 19. I had difficulties learning owing to the uncertainties regarding COVID-19.	80	15.5	95	18.4	187	36.2	11	21.5	43	8.3
	I 20. I had difficulties practicing the information I gained owing to fears of infection.	138	26.7	106	20.5	127	24.6	96	18.6	49	9.5
	I 21. I had difficulties accessing up-to-date and primary resources regarding COVID-19.	131	25.4	134	26.0	140	27.1	74	14.3	37	7.2
	I 22. I did not have sufficient time to gain new information in the COVID-19 pandemic.	133	25.8	139	26.9	142	27.5	73	14.1	29	5.6
	I 23. I had difficulties practicing the information I gained as I did not have sufficient equipment.	153	29.7	113	21.9	124	24.0	88	17.1	38	7.4

I; Item

Table 3. Chi-Square Analysis on Comparison of Nurses' Entry Characteristics and Learning Experiences (n=516)

Learning Experiences	Age			Chi-Square	P	Professional Experience					Chi-Square	P
	Generation X	Generation Y	Generation Z			Less than 1 year	1-4 years	5-10 years	11-15 years	More than 16 years		
I 1					.130	7.3%	37.7%	19.3%	12.0%	23.7%	23.692	<.001*
I 2	8.2%	86.8%	5%	26.591	.003*	9.2%	48.5%	15.5%	11.9%	14.9%	27.666	<.001*
I 3					.320	8.2%	38.9%	16.4%	10.2%	26.3%	19.353	.002*
I 4	17.1%	81.8%	1.1%	15.521	<.001*	6.2%	40.4%	17.5%	11.3%	24.7%	16.824	.004*
I 5					.470							.602
I 6	13.5%	85.0%	1.5%	15.892	.037*							.049
I 7					.080							.280
I 8					.189							.203
I 9	5.2%	88.7%	6.1%	22.648	.002*	6.1%	59.1%	14.8%	12.2%	7.8%	35.765	<.001*
I 10					.350	8.7%	43.6%	15.5%	11.0%	21.1%	28.067	.031*
I 11	14.1%	82%	3.9%	18.420	.018*							.097
I 12					.118							.078
I 13					.079							.073
I 14	10%	85.5%	4.5%	17.413	.026*							.229
I 15					.443	5.5%	45.7%	16.9%	11.1%	20.8%	17.399	.007*
I 16					.068							.095
I 17	8.2%	87.1%	4.7%	18.373	<.001*	6.5%	56.0%	16.8%	6.9%	13.8%	48.219	<.001*
I 18	9.0%	86.2%	4.8%	14.652	<.001*	8.5%	52.9%	15.9%	7.9%	14.8%	22.805	<.001*
I 19	8.4%	87.0%	4.5%	13.357	.002*	6.5%	47.4%	19.5%	9.7%	16.9%	17.481	<.001*
I 20					.068	7.6%	49.0%	20.0%	11.0%	12.4%	17.108	.003*
I 21					.175	3.6%	55.0%	20.7%	3.6%	17.2%	28.134	.006*
I 22	3.9%	90.2%	5.9%	14.599	<.001*	6.9%	48.0%	22.5%	10.8%	11.8%	20.941	.002*
I 23	7.1%	90.5%	2.4%	10.872	<.001*	5.6%	49.2%	23.0%	9.5%	12.7%	19.608	<.001*

*<.05: statistically significant, I; Item

There was a significant difference between nurses' educational status and the items they stated to have sufficient knowledge about symptoms, sufficient knowledge about patient care and skills ($P<.01$). Nurses who have a bachelor's degree noted that they had more knowledge and skills about the symptoms of the disease and the care for COVID-19 patients (Table 4).

When the difficulties experienced by nurses in the learning process during the pandemic and nurses' educational status are examined, significant differences were found between nurses' educational status and difficulties in having time to gain new information during the COVID-19, heavy workload, practicing the information due to fears of infection ($P<.01$) (Table 4).

There was a significant difference between nurses' workplace and preferred learning materials and learning styles in learning information about COVID-19 ($P<.01$). Nurses who were working in state hospitals stated that they benefited more from international scientific resources and training conducted in hospitals on COVID-19 (Table 4).

A significant difference was found between nurses' workplace and experienced by nurses in the learning process during the pandemic ($P<.01$). Nurses working in

state hospitals stated that they had more difficulties in learning during the COVID-19 process due to heavy workload, insufficient number of nurses, fear of infection, accessing up-to-date and primary sources and insufficient time to gain new information regarding COVID-19 (Table 4).

DISCUSSION

This study assessed nurses' learning experiences, and the data were discussed in line with the literature. Nurses were aged between 20 and 59 years and represented different generations. The professional experience periods also show a wide range from 1 year to 41 years. The working group has a rich and colorful profile from novice nurses to experienced nurses.

They utilized international scientific references, observation, and guidelines from the Ministry of Health the most to learn about COVID-19. The literature indicates that nurses make efforts to gain information about the fight against the pandemic and care for COVID-19 patients from guidelines and studies, and they gain information from observations and the trial-and-error method.²⁵ Nurses also selected the method of observation to gain information, which suits the process of experimental learning; observing and supervising current experiences is related to the

Table 4. Chi-Square Analysis of Nurses' Learning Experiences About COVID-19 According to Their Educational Levels and Workplaces (n=516)

Learning Experiences	Education status				P	Workplace				
	High school	Bachelor's Degree	Master's Degree	Chi-Square		State	University	Private	Chi-Square	P
I 1	6.3%	57.3%	36.3%	26.829	<.001*	67.4%	15.1%	17.5%	17.168	.028*
I 2	11.9%	61.7%	26.4%	13.315	.001*	59.4%	16.1%	24.5%	17.280	.027*
I 3	7.2%	54.9%	37.9%	31.411	<.001*					.276
I 4	6.9%	56.0%	37.1%	24.353	<.001*	65.1%	19.6%	15.3%	11.814	<.001*
I 5					.221					.072
I 6	9.3%	55.7%	34.9%	6.186	.001*					.340
I 7					.056	61.3%	12.3%	26.4%	20.644	<.001*
I 8					.098					.775
I 9					.071					.220
I 10					.104					.084
I 11	10.8%	59.4%	29.8%	10.956	.002*	59.7%	17.1%	23.3%	19.031	.015*
I 12	9.4%	59.8%	30.8%	11.733	<.001*					.061
I 13					.106	82.0%	14.1%	3.9%	14.114	.029*
I 14					.126					.075
I 15	11.9%	56.8%	31.3%	14.410	<.001*	58.8%	17.1%	21.1%	18.017	.021*
I 16	9.9%	61.6%	28.5%	16.413	.037*					.071
I 17	12.9%	64.7%	22.4%	13.724	.001*	71.1%	15.1%	13.8%	14.996	<.001*
I 18					.058	71.4%	11.1%	17.5%	12.801	.002*
I 19					.113					.491
I 20	10.3%	66.9%	22.8%	16.934	<.001*	72.4%	13.8%	13.8%	10.519	.001*
I 21					.068	78.4%	9.9%	11.7%	16.440	.001*
I 22	21.6%	57.8%	20.6%	27.294	.009*	61.8%	15.7%	22.5%	12.500	.003*
I 23	22.5%	55.4%	21.1%	18.213	.036*	67.6%	10.8%	21.6%	15.087	.045*

*<.05; statistically significant, I; Item

planning and preparation of future experiences.²⁶ This study showed that nurses had difficulties practicing what they learned due to a heavy workload, an insufficient number of nurses, and uncertain progress of the disease. There are approximately 200.000 nurses in Türkiye, suggesting two nurses per every 1000 people in Türkiye.¹³ This rate indicates that nurses have been working with an extremely heavy workload during the pandemic. Moreover, this study revealed that the high workload and an insufficient number of nurses were obstacles to practicing what was learned. In the study, nurses also stated that they had difficulty in transferring the knowledge they learned to practice because they did not have enough equipment. Especially at the beginning of the pandemic, lack of equipment was an important problem. Studies have shown that lack of equipment causes stress in healthcare professionals and this situation negatively affects the learning process and decreases learning motivation.^{22,27-29}

It was determined that the age of the nurses affected their learning experiences related to COVID-19. Currently, three different generations work together in the working environments. Each generation has its own characteristics, values, beliefs, and ways of learning.³⁰ It is known that the

X generation is a self-sacrificing generation who tries to

solve their own problems and respects authority.³¹ When examined in terms of learning ways, the X generation wants to present the information directly and in the simplest way and to learn the information in the easiest and fastest way possible.³¹ Generation Y are individuals who are willing to learn, and innovative and they follow information mostly from internet resources as they are used to using computers.³¹ They prefer group projects that require more teamwork in their learning.³² Our study also supports this information and shows that Generation Y learns information about COVID-19 mostly from international scientific sources. On the other hand, study results showed that the nurses in the Generations X and Z prefer observation, trial and error. Individuals in the Z generation mostly prefer visual, affective, and active learning methods, they develop their professional skills through observation accompanied by practice. Individuals in Generation Z mostly prefer visual, affective, and active learning methods, and they develop their professional skills primarily through observation.

It was found that undergraduate nurses mostly learned information about COVID-19 from national and international scientific sources and Ministry of Health

guidelines and preferred to make observations. There are studies in the literature showing that nurses with a high level of learning obtain information from reliable websites.³²⁻³⁴ As the educational status increased, conscious efforts of learning increased, different learning sources were used, and international databases were utilized, which is an expected result and can be interpreted as an indicator of scientific attitude.

The workplace had an impact on learning attitudes. Nurses working in state hospitals gained information through institutional training, utilized international scientific references, and needed more information about the ways of infection and symptoms of the disease. Nurses working in state hospitals had more difficulties accessing up-to-date references due to a heavy workload, an insufficient number of nurses, fear of infection, accessing up-to-date and primary sources.

Limitations

The theoretical limitation of the study is the lack of sufficient sources in the literature. The methodological limitation of the study is the difficulties in accessing nurses due to the pandemic. The online collection of data limited the availability of sufficient information about the geographical region, hospital and patient density in which the participants worked. This resulted in the inability to fully analyze the effects of regional differences and hospital density within the scope of the study. The weak representation power of the sample size used in the study to represent the population limits the generalizability of the findings and the strength of data analysis. Another limitation is the absence of a valid and reliable scale for nurses' learning experiences.

It is necessary to determine the learning needs, learning experiences and learning styles of nurses for the planning of in-service training. The limited research on nurses' learning experiences highlights a need for further studies. It is thought that the findings obtained from this study, which examined the learning experiences of nurses regarding COVID-19, will guide the planning of educational activities. This study found that nurses primarily rely on national and international scientific sources, Ministry of Health guidelines, and observation methods to acquire information about COVID-19. Heavy workloads and staff shortages are key challenges that affects their learning processes. Nurses' educational backgrounds and workplaces also influence their learning experiences during the pandemic. While nurses actively follow relevant publications, professional constraints make it difficult to apply acquired knowledge in practice. Supporting nurses' access to information and improving their working

conditions are essential to addressing these issues. Up-to-date information sharing must be structured for easy access, and platforms for knowledge exchange at both national and international levels should be established. Nursing educators and administrators should offer training and psychological support to mitigate pandemic-related stress and boost motivation. Professional organizations must lead efforts to empower nurses during crises.

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REFERENCES

1. Kiraner, E, Terzi, B, Türkmen, E, Kebapçı, A. ve Bozkurt, G. Experiences of Turkish Intensive Care Nurses in the COVID-19 Outbreak". *J Educ Res Nurs.* 2020;17(3):284-286. <https://doi.org/10.5222/HEAD.2020.35556>
2. Şenol Çelik S, Atılı Özbaşı A, Çelik B, et al. COVID-19 pandemic process: Turkish Nurses Association. *J Educ Res Nurs.* 2020;17(3):279-83. <https://doi.org/10.5222/KUHEAD.2020.34603>
3. Weaver, S. H., Fleming, K., Harvey, J., Marcus-Aiyeku, U., & Wurmser, T. A. Clinical Nurses' View of Staffing During the Pandemic. *Nurs. Adm. Q.* 2023;47(2):136-149. <https://doi.org/10.1097/naq.0000000000000573>
4. Catania, G., Zanini, M., Hayter, M., Timmins, F., Dasso, N., Ottonello, G., et al. Lessons from Italian front-line nurses' experiences during the COVID-19 pandemic: A qualitative descriptive study. *Nurs Manag.* 2021;29(3):404-411. <https://doi.org/10.1111/ionm.13194>
5. Pourgholam, N., Zareiyani, A., Farsi, Z., & Abbasiyan, K. Exploring perceived stress from caring for coronavirus

- disease (COVID-19) patients in nurses: a qualitative study. *J Nurs*. 2023;28(1):38-50. <https://doi.org/10.1177/17449871221131181>
6. Xu, H., Stjernswärd, S., & Glasdam, S. Psychosocial experiences of frontline nurses working in hospital-based settings during the COVID-19 pandemic-A qualitative systematic review. *IJNS Advances*, 2021;3,100037. <https://doi.org/10.1016/j.ijnsa.2021.100037>
 7. Nasrabadi, A. N., Abbasi, S., Mardani, A., Maleki, M., & Vlaisavljevic, Z. Experiences of intensive care unit nurses working with COVID-19 patients: a systematic review and meta-synthesis of qualitative studies. *Front Public Health*. 2022;10:1034624. <https://doi.org/10.3389/fpubh.2022.1034624>
 8. Simonetti, V., Durante, A., Ambrosca, R., Arcadi, P., Graziano, G., Pucciarelli, G., et al. Anxiety, sleep disorders and self-efficacy among nurses during COVID-19 pandemic: A large cross-sectional study. *J Clin Nurs*. 2021;30(9-10):1360-1371. <https://doi.org/10.1111/jocn.15685>
 9. Ünver, S., & Yeniğün, S. C. COVID-19 fear level of surgical nurses working in pandemic and surgical units. *J Perianesth Nurs*. 2021;36(6):711-716. <https://doi.org/10.1016/j.jopan.2021.04.014>
 10. Labrague, L. J., & de Los Santos, J. A. A. Fear of Covid-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *J Nurs Manag*. 2021;29(3):395-403. <https://doi.org/10.1111/jonm.13168>
 11. Andresen L, Boud D, Cohen R. Experience-based learning. Foley G, editor. Understanding adult education and training. 2nd Edition. United Kingdom: Routledge; 2000. <https://doi.org/10.4324/9781003118299-22>
 12. Knowles M. A theory of adult learning. Knowles M, Holton E, Swanson R, editors. The adult learner. 6th Edition. London: Butterworth-Heinemann; 2005. <https://doi.org/10.4324/9780080481913>
 13. The Turkish Ministry of Health. Health Statistics Yearbook 2019 [Internet]. 2021 [Accessed date April 15, 2021]. Accessed address: <https://dosyasb.saglik.gov.tr/Eklenti/45316,siy2021-turkcepdf.pdf?0>
 14. Centers for Disease Control and Prevention (CDC). Open Epi Sample Size Calculator [Internet]. [Accessed date March 20, 2021]. Access address: <https://www.openepi.com/SampleSize/SSPropor.htm>
 15. Arafa M, Nesar, S., Abu-Jabeh H, Jayme Mor, Kalairajah Y. COVID-19 pandemic and hip fractures: Impact and lessons learned. *Bone Joint Open*. 2020;1(9):530-40. <https://doi.org/10.1302/2633-1462.19.BJO-2020-0116.R1>
 16. Dewey C, Hingle S, Goelz E, Linzer M. Supporting clinicians during the COVID-19 pandemic. *Ann Intern Med*. 2020;172(11):752-753. <https://doi.org/10.7326/M20-1033>
 17. Diez-Sampedro A, Gonzalez A, Delgado V, Flowers M, Maltseva T, Olenick M. COVID-19 and advanced practice registered nurses: frontline update. *J Nurse Pract*. 2020;16(8):551-555. <https://doi.org/10.1016/j.nurpra.2020.06.014>
 18. Mehrotra A, Ray K, Brockmeyer DM, Barnett ML, Bender JA. Rapidly converting to “virtual practices”: outpatient care in the era of COVID-19. *NEJM Catalyst Innovations in Care Delivery*. 2020;1(2). <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0091>
 19. Tengilimoğlu D, Zekioğlu A, Tosun N, Işık O, Tengilimoğlu O. Impacts of COVID-19 pandemic period on depression, anxiety and stress levels of the healthcare employees in Turkey. *Leg Med*. 2021;48:101811. <https://doi.org/10.1016/j.legalmed.2020.101811>
 20. Zheng R, Zhou Y, Qiu M, Yan Y, Yue J, Yu L, et al. Prevalence and associated factors of depression, anxiety, and stress among Hubei pediatric nurses during COVID-19 pandemic. *Compr Psychiatry*. 2021;104:152217. <https://doi.org/10.1016/j.comppsy.2020.152217>
 21. Zhang M, Zhou M, Tang F, Wang Y, Nie H, Zhang L, et al. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Henan, China. *J Hosp Infect*. 2020;105(2):183-187. <https://doi.org/10.1016/j.jhin.2020.04.012>
 22. Saruç, S., Kızıldaş. An analysis of the healthcare personnel's anxiety levels during the COVID-19 pandemic in terms of their psychological resilience and the problems they experienced. *J Psychiatric Nurs*, 2021;12(4):314-323. <https://doi.org/10.14744/phd.2021.04378>
 23. Davis, L. L. Instrument review: Getting the most from a panel of experts. *Appl Nurs Res*. 1992;5(4):194-197 [https://doi.org/10.1016/S0897-1897\(05\)80008-4](https://doi.org/10.1016/S0897-1897(05)80008-4)
 24. George D, & Mallery P. SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon, 2003. <https://dl.acm.org/doi/abs/10.5555/557542>
 25. Kolb DA. Experiential Learning: Experience as the Source of Learning and Development. New Jersey: Prentice Hall; 1984. Chapter 1, The process of experiential learning; p.20-38.
 26. Halcomb E, Williams A, Ashley C, McInness S, Stephen C, Calma K, et al. The support needs of Australian primary health care nurses during the COVID-19 pandemic. *Nurs Manag*. 2020;28(7):1553-1560. <https://doi.org/10.1111/jonm.13108>
 27. Livingston E, Desai A, Berkwits M. Sourcing personal protective equipment during the COVID-19 pandemic. *Jama*. 2020;323(19):1912-1914. <https://doi.org/10.1001/jama.2020.5317>
 28. Ranney ML, Griffeth V, Jha AK. Critical supply shortages: The need for ventilators and personal protective equipment during the COVID-19 pandemic. *N Engl J Med*. 2020;382(18):41-43. <https://www.nejm.org/doi/10.1056/NEJMp2006141>
 29. Verbeek H, Gerritsen DL, Backhaus R, de Boer BS, Koopmans RT, Hamers JP. Allowing visitors back in the nursing home during the COVID-19 crisis: A Dutch national study into first experiences and impact on well-being. *J Am Med Dir Assoc*. 2020;21(7):900-904. <https://doi.org/10.1016/j.jamda.2020.06.020>

30. Johnson SA, Romanello ML. Generational diversity: teaching and learning approaches. *Nurse Educ.* 2005;30(5):212-216. <https://doi.org/10.1097/00006223-200509000-00009>
31. Shorey S, Chan V, Rajendran P, Ang E. Learning styles, preferences and needs of generation Z healthcare students: Scoping review. *Nurse Educ Pract.* 2021;57:103247. <https://doi.org/10.1016/j.nepr.2021.103247>
32. Kim JS, Choi JS. Middle East respiratory syndrome-related knowledge, preventive behaviors and risk perception among nursing students during outbreak. *J Clin Nurs.* 2016;25(17-18):2542-2549.
33. Nemati M, Ebrahimi B, Nemati F. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. *Arch Clin Infect Dis.* 2020;15(COVID-19):e102848. <https://doi.org/10.5812/archcid.102848>
34. Tan R, Yu T, Luo K, et al. Experiences of clinical first-line nurses treating patients with Covid-19: A qualitative study. *J Nurs Manag.* 2020;28(6):1381-1390. <https://doi.org/10.1111/jonm.13095>