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DETERMINATION OF ANXIETY AND E-HEALTH LITERACY LEVELS, AND RELATED FACTORS IN PHYSICIANS AND NURSES INVOLVED IN THE TREATMENT AND CARE OF COVID-19 PATIENTS

COVID-19 tanılı hastaların tedavi ve bakımını yapan hekim ve hemşirelerin anksiyete ve e-sağlık okuryazarlık düzeyleri ile ilişkili faktörlerin belirlenmesi

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Abstract

This study was conducted to determine the level of anxiety and eHealth literacy and related factors among physicians and nurses working in inpatient and intensive care units where COVID-19 patients were cared for during the pandemic. This descriptive study was conducted with 161 physician and nurse working in inpatient and intensive care units. A p-value of <0.05 was considered statistically significant. The mean scores of the Coronavirus Anxiety Scale and eHealth Literacy Scale (eHEALS) of physicians and nurses were 2.74±3.57 and 28.72±7.74, respectively. It was found that physicians and nurses who desired psychological support had high anxiety scores but low scores on the eHEALS. Anxiety increased the longer one engaged in viewing/reading information or news about the pandemic. During the pandemic outbreak, it is crucial to regularly inform physicians and nurses about the pandemic through appropriate sources and provide them with the necessary psychological support after determining their level of anxiety.
Keywords: Anxiety, COVID-19 pandemic, e-health literacy, physician, nurse.

Özet

Bu çalışma, pandemi döneminde COVID-19 tanılı hastaların takip edildiği servis veya yoğun bakım ünitelerinde çalışan hekim ve hemşirelerin anksiyete ve e-sağlık okuryazarlık düzeyleri ile ilişkili faktörleri belirlemek amacıyla yapılmıştır. Tanımlayıcı tipte olan bu çalışma servis veya yoğun bakım ünitelerinde çalışan 161 hekim ve hemşire ile tamamlanmıştır. Çalışmada p<0,05 değeri istatistiksel olarak anlamlı kabul edilmiştir. Hekim ve hemşirelerin Koronavirüs Anksiyete Ölçeği ve e-Sağlık Okuryazarlık Ölçeği puan ortalaması sırasıyla 2,74±3,57, 28,72±7,74'tür. Psikolojik destek almak isteyen hekim ve hemşirelerin anksiyete puanlarının arttığı ve e-sağlık okuryazarlık puanının azaldığı saptamıştır. Pandemi ile ilgili bilgi veya haber izleme/okuma süresinin artması ile anksiyetenin arttığı belirlenmiştir. Pandemi döneminde hekim ve hemşirelerin pandemiye ilişkin doğru kaynaklardan düzenli olarak bilgilendirilmelerinin sağlanması ve anksiyete düzeylerinin belirlenerek gerekli psikolojik desteğin verilmesi önemlidir.
Anahtar kelimeler: Anksiyete, COVID-19 pandemisi, e-sağlık okuryazarlık, hekim, hemşire.

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Introduction

Coronavirus disease-19 (COVID-19), similar to other members of the Coronavirus family, causes a disease called COVID -19 that affects the respiratory system (1, 2). COVID-19 spread worldwide in December 2019 and has become a pandemic by 2020. The number of COVID-19 cases has reached 122.9 million worldwide by Mar 23, 2021 (2).

In order to cope with the COVID-19 pandemic, which is considered the biggest health problem of the present time, healthcare workers had to work long and strenuous hours (3-5). It is observed that health professionals working during the pandemic period experience increased physical and psychological problems due to the fear of contracting and transmitting the disease to their relatives (3, 4, 6). Therefore, it is important to protect health workers' physical and mental health status and support them in the fight against the pandemic if needed.

When a new disease such as a pandemic occurs, the need to be informed increases due to the lack of sound information about the aetiology, prognosis, and treatment, especially among health professionals. In such cases, the Internet as a source of information becomes an easily accessible tool to meet the need for information (7, 8). EHealth literacy that enables individuals to access information through the right and reliable sources has positively impacted the health of individuals and those around them (9, 10). In this context, the rapid access of health professionals to accurate and up-to-date information is critical to their efforts in dealing with the global pandemic.

This study was conducted to determine the level of anxiety and eHealth literacy and related factors among physicians and nurses working in adult and/or paediatric inpatient and intensive care facilities where COVID-19 patients were cared for during the pandemic.

Material-Method

2.1. Type of research

This study was of descriptive type.

2.2. Place and time of the study

This study was conducted between Dec 18, 2020, and Jan 18, 2021, in the City Center Hospital in Eskişehir, Turkey with inpatient and intensive care units where COVID-19 patients were followed up during the pandemic.

2.3. Study sample

No sample calculations were performed for this study. Individuals who agreed to participate were included in the study. After the necessary permissions were obtained, the study was started and completed after 161 physicians and nurses met the inclusion criteria. The inclusion criteria required that physicians and nurses agreed to participate in the study and work for at least one month in an inpatient facility or intensive care unit that cared for patients diagnosed with COVID-19. After the study, post hoc power analysis was performed with G-Power (3.1). Accordingly, the power of the study completed with 161 people was found to be 92.04% at a significance level of 0.05.

Age was recorded in years. The youngest age group comprised individuals aged 15 to 29 years and is referred to as ‘adolescents’ given that they are in transition into consumer role, labour force, and having an own family and thus gradually becoming financially and emotionally independent (11). Therefore, the age was categorized into two age groups “30 years below” and “30 years and above” for the analyses.

2.4. Data collection tools

The study data were collected by administering an Introductory Information Form, the Coronavirus Anxiety Scale, and the eHealth Literacy Scale.

The introductory information form, was developed by the researchers according to the information in the literature (12-13). The form consists of questions inquiring about the demographic characteristics of participating physicians and nurses and the period during the COVID-19 pandemic.

Coronavirus anxiety scale (CAS), CAS was developed by Lee (2020). The Cronbach alpha value of the scale was 0.93. This scale is a mental health self-assessment screening instrument that measures dysfunctional anxiety related to the Coronavirus crisis. CAS has a discriminative power of 90% sensitivity and 85% specificity. Items on the scale are rated on a five-point Likert scale from 0 (not at all) to 4 (almost every day) according to participants' experiences over the past two weeks. The lowest score on the scale is 0, and the highest is 20. A CAS total score of 9 or more indicates dysfunctional anxiety related to coronavirus (13). The validity and reliability study of the scale in the Turkish language was conducted by Sayik et al. (2021). The Cronbach's alpha value of the scale in this study was 0.809. This study reported that CAS is a valid and reliable measurement tool to assess the specific fears related to the COVID-19 pandemic in Turkish culture (14).

eHealth literacy scale (eHEALS), was developed by Norman and Skinner (2006). The Cronbach alpha value of the scale was 0.88. This scale is a tool to assess the skill of using information technologies for health-related purposes. This scale consists of two items about internet use and eight items to assess the internet use attitudes. On a five-point Likert-type scale, the scale items were graded from 1 (strongly disagree) to 5 (strongly agree). The lowest and the highest scores obtained from the scale are 8 and 40, respectively. A high score from the scale indicates a high level of eHealth literacy (15). The validity and reliability study of the scale in the Turkish language was performed by Coskun and Bebis (2015). The Cronbach alpha value in that study was 0.78 (16).

2.5. Data collection

The data were collected through an online survey sent to participants via WhatsApp. A questionnaire was designed and executed and made using google forms and link generated was shared on Whatsapp Messenger.

2.6. Ethical consideration

Permissions for using the scales were obtained before the commencement of the study. Permissions to conduct the study were obtained from the Turkish Republic Ministry of Health (date 9/16/2020, issue number 2020-09-15T17_21_08), the ethics committee (date 11/26/2020, issue number E-25403353-050.99-115107) from the Eskisehir Osmangazi University Ethics Committee, and the institution (date 12/25/2020 issue number 52167207-604.02). In addition, permission was received for use of the scales in the study. Only the volunteering individuals who supplied written consent were included in the study.

2.7. Statistical analysis

The data were analysed using the IBM SPSS Statistics 21.0 software. Descriptive statistics were used in the statistical analysis of the study data. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess the data distribution. Spearman's rank correlation coefficient analysed relationships between the non-normally distributed variables. The mean standard deviation ($\overline{X}$±SD) of continuous data is given. Categorical data is given as a percentage (%). The Mann-Whitney U test and Kruskal Wallis H test performed the intergroup comparisons of non-normally distributed numeric variables. A p-value of <0.05 was considered statistically significant.

Results

The age of physicians and nurses (n=161) ranged from 21 to 57 years, and the mean age was 33.60±8.76 years. Of the participants, 65.8% (n=106) were women, 58.4% (n=94) were married, 69.6% (n=112) had associate degrees/graduates, and 46.0% (n=74) had children. It was found that 52.2% (n=84) of participants' income matched their expenses. It was found that 24.2% (n=39) of participants had a chronic illness, 5.6% (n=9) had a mental disorder, and 26.1% (n=42) were smokers and used alcohol. Participants had worked for an average of 6.12±3.23 months in departments that admitted patients with COVID-19 infection. For 58.4% (n=94) and 41.6% of participants, the duration of working in such departments was 6-10 months and 1-5 months, respectively. Of the participating physicians and nurses, 24.8% (n=40) reported that they had previously recovered from COVID-19 infection, and 93.8% (n=151) reported that their working conditions were adversely affected by the pandemic. It was found that 79.5% of participants (n=128) had watched/read news and other sources of information to learn about the COVID-19 pandemic in the past month, and 96.3% (n=123) had obtained information from the Internet.

Of the participating physicians and nurses, 61.5% (n=99) worked in the adult inpatient unit COVID-19, 29.2% (n=29.2) worked in the adult intensive care unit COVID-19, and 9.3% (n=15) worked in the paediatric inpatient unit COVID-19. The comparison of the characteristics of health care workers by the scores obtained from the CAS and the eHEALS are shown in Table 1.

It was found that 79.5% of the participants (n=128) spent an average of 29.10±30.75 minutes per day reading/viewing news and other sources of information about the COVID-19 pandemic in the past month. The Comparison of health care workers' attributes of obtaining information about the COVID-19 pandemic by the scores obtained from the CAS and eHEALS are shown in Table 2.

The mean CAS and eHEALS scores of health workers were 2.74±3.57 (min:0.00-max:20.00) and 28.72±7.74 (min:8.00-max:40.00), respectively. No correlations were found between the scores of the participants' on CAS and eHEALS scores (r=-0.105; p=0.184).

Table 1: The Comparison of the characteristics of health care workers by the scores obtained from the CAS and the eHEALS.

Variable (n = 161)			CAS Scores		Statistical analysis probability	eHEALS Scores		Statistical analysis probability
	n	%	Mean-Median	Min-Max		Mean-Median	Min-Max	
Age ($\bar{X}$±SD; 33.60±8.76)								
30 years below	71	44.1	3.45-2.00	0.0-20.0	**Z=-2.105**	29.15-31.00	8.0-40.0	Z=-0.245
30 years and above	90	55.9	2.18-1.00	0.0-13.0	**p=0.035**	28.37-31.00	8.0-40.0	p=0.807
Marital status								
Married	94	58.4	2.45-1.00	0.0-13.0	Z=-0.703	29.62-32.00	9.0-40.0	Z=-2.191
Single/Divorced	67	41.6	3.14-2.00	0.0-20.0	p=0.482	27.44-30.00	8.0-40.0	**p=0.028**
Educational status								
Associate / Bachelor	112	69.6	2.91-2.00	0.0-18.0	Z=-1.412	27.85-30.00	8.0-40.0	Z=-2.530
Graduate	49	30.4	2.36-1.00	0.0-20.0	p=0.158	30.69-32.00	11.0-40.0	**p=0.011**
Occupation								
Physician	58	36.0	2.17-1.00	0.0-10.0	Z=-1.263	30.65-32.00	11.0-40.0	**Z=-2.756**
Nurse	103	64.0	3.06-2.00	0.0-20.0	p=0.207	27.63-30.00	8.0-40.0	**p=0.006**

Unit								
Adult Inpatient COVID-19 Unit	99	64.5	2.21-1.00	0.0-20.0		28.55-31.00	8.0-40.0	
Adult COVID-19 Intensive Care	47	29.2	3.87-3.00	0.0-13.0	χ^2=3.926 p= 0.140	28.93-31.00	12.0-40.0	χ^2=0.049 p= 0.976
Paediatric COVID-19 Inpatient Unit	15	9.3	2.73-1.00	0.0-18.0		29.13-30.00	17.0-36.0	
The participant is afraid of getting infected with COVID-19.								
Yes	131	81.4	2.98-2.00	0.0-20.0	Z=-2.546	28.98-31.00	8.0-40.0	Z=-0.065
No	30	18.6	1.70-0.00	0.0-13.0	**p= 0.011**	27.56-32.00	8.0-40.0	p= 0.948
The participant thinks that his/her anxiety level elevated during the COVID-19 pandemic.								
Yes	131	81.4	3.20-2.00	0.0-20.0	Z=-5.233	28.70-31.00	8.0-40.0	Z=-0.698
No	30	18.6	0.73-0.00	0.0-8.0	**p< 0.001**	28.80-32.00	9.0-40.0	p= 0.485
The participant thinks that he/she needs professional psychological support during the COVID-19 pandemic.								
Yes	75	46.6	4.26-3.00	0.0-20.0	Z=-4.959	27.20-30.00	8.0-39.0	Z=-2.238
No	86	53.4	1.41-1.00	0.0-9.0	**p< 0.001**	30.04-31.50	8.0-40.0	**p= 0.025**

$\bar{X}$±SD= Mean±Standard deviation, Z = Mann-Whitney U test, χ^2= Kruskal-Wallis H test

Table 2: The Comparison of health care workers' attributes of obtaining information about the COVID-19 pandemic by the scores obtained from the CAS and eHEALS.

Variable (n = 161)			CAS Scores		Statistical analysis probability	eHEALS Scores		Statistical analysis probability
	n	%	Mean-Median	Min-Max		Mean-Median	Min-Max	
The participant obtained information or read/watched the news about the COVID-19 pandemic over the last month.								
Yes	128	79.5	3.10-2.00	0.0-20.0	Z=-3.256	28.91-31.00	8.0-40.0	Z=-0.669
No	33	20.5	1.33-0.00	0.0-13.0	**p<0.001**	27.96-29.00	12.0-40.0	p=0.504
The length of time spent on obtaining information or watching/reading news about the COVID-19 pandemic over the last month (minutes) ($\bar{X}$±SD; 29.10±30.75)								
Not watching/reading.	33	20.5	1.33-0.00	0.0-13.0		27.96-29.00	12.0-40.0	
1-30 minutes	86	53.4	2.50-2.00	0.0-13.0	χ^2=16.061 **p<0.001**	28.61-31.00	8.0-40.0	χ^2=1.272 p=0.529
31 minutes and more	42	26.1	4.35-2.50	0.0-20.0		29.52-31.50	9.0-40.0	
The participant's consideration of the degree of the usefulness of the Internet in making decisions about his/her health.								
Not at all useful	7	4.3	0.42-0.00	0.0-2.0		27.85-32.00	9.0-38.0	
Not useful	15	9.3	1.80-1.00	0.0-12.0	χ^2=8.624	26.53-28.00	11.0-40.0	χ^2=18.234
Undecided	74	46.0	2.97-2.00	0.0-20.0	**p=0.035**	27.04-27.50	9.0-40.0	**p<0.001**
Useful	65	40.4	2.95-1.00	0.0-18.0		31.23-32.00	8.0-40.0	
The participant's consideration of the degree of importance of having access to health-related sources through the Internet.								
Not important	12	7.5	0.66-0.00	0.0-3.0		21.33-18.50	9.0-36.0	
Undecided	27	16.8	2.74-2.00	0.0-13.0	χ^2=7.041	25.81-28.00	12.0-36.0	χ^2=14.134
Important	122	75.8	2.95-2.00	0.0-20.0	**p=0.030**	30.09-31.50	8.0-40.0	**p<0.001**

$\bar{X}$±SD= Mean±Standard deviation, Z = Mann-Whitney U test, χ^2= Kruskal-Wallis H test

Discussion

This study was conducted to determine the level of anxiety and eHealth literacy and related factors among physicians and nurses working in adult and/or paediatric inpatient and intensive care facilities where COVID-19 patients were cared for during the pandemic.

Discussion of the comparison of participants' characteristics by CAS scores

The study found that CAS scores were higher in young participants. Other studies examining the level of anxiety experienced by individuals during the pandemic (17, 18) have also reported that young people experience more anxiety.

However, studies of physicians and nurses working in inpatient units (17, 19-20) and intensive care units (6) during the pandemic have not found differences in anxiety levels by age. The differences between the results of our study and those of the other studies in the literature may be since this study was conducted on physicians and nurses specifically responsible for the treatment and care of COVID-19 patients.

There were no significant differences in the participants' CAS scores in the present study according to marital status, educational level, occupation, and field of work. There are similar studies in the literature in which participants' anxiety scores were not related to marital status (21) or educational status (6, 19, 21, 22), jobs (4, 19-21) and the unit in which they worked (17, 20, 22). It can be said that the results of this study and those reported by other studies in the literature are similar.

This study found that CAS levels were higher among participants who were fearful of COVID-19 infection, reported needing professional psychological support during the pandemic, believed that their anxiety levels increased, and focused on obtaining and reading information/news about the pandemic. This result is important in terms of showing that the scale works correctly. Similar to the findings of this study, other studies are also available that report higher anxiety levels among individuals and health professionals who mainly focused on SARS-CoV-2 infection and had a fear of infection COVID-19 (6, 23, 24). Due to the pandemic, health professionals had to adjust to increased workloads and long hours while struggling to care for their families. Due to the increased workload and responsibilities, the use of professional psychological support among health professionals increased. It was reported that in Wuhan, where the outbreak began, 17.5% of health professionals received professional psychological support during the pandemic, 36.3% read books on mental health, and 50.4% searched for psychological resources online (25). It is important to plan for psychosocial support at the same time to control the spread of infection during the pandemic. Hyun et al. (2020) reported that psychosocial support activities implemented in Korea during the COVID-19 pandemic improved public health perceptions among the public and health professionals (26). Literature (25-29) highlights that providing psychosocial support to health professionals and people in the community positively contributes to success in managing anxiety and preventing burnout.

Discussion of the comparison of participants' characteristics by eHEALS scores

There were no significant differences in participants' eHEALS scores in the present study according to age distribution. Similar other studies (30, 31) have found no correlations between age and eHealth literacy. In contrast, results from another study (32) show that individuals aged 21-30 years have higher eHealth literacy than individuals aged 31-40 years. The discrepancy between these results could be due to the different characteristics of the participants in the different studies.

In the present study, when the participant's marital status was compared with their eHEALS scores, it was found that the eHEALS scores were better in married participants. In contrast to our findings, other studies reported no correlations between marital status and eHealth literacy among people in the community (30) or medical personnel (30-33). The discrepancies in the results might be since physicians and nurses who treat and care for COVID-19 patients were included in this study. Staff working in COVID-19 departments are more likely to be infected and spread the infection at home than staff working in other departments. Accordingly, it can be argued that married physicians and nurses may have turned to eHealth resources for easy access to available information about the pandemic to protect their families.

This study found that eHEALS was higher among participants with a high school diploma than with associate and bachelor degrees. Studies in the literature (10, 34)

show that efforts to access online health information increase with higher educational status. In contrast to these findings, other studies show no correlations between eHEALS levels and educational status (30, 33). It is expected that higher educational status is associated with more outstanding efforts to access information. A possible explanation for this might be be that that formal education as a pathway to educational attainment is not a critical factor but rather a limiting factor for accessing online resources, including attaining eHealth literacy.

In this study, it was found that the eHEALS of physicians was higher than that of nurses. In a similar study (31), it was found that the eHealth literacy of physicians was higher than that of other health professionals. In another study (41), no associations were found between eHealth literacy and profession. The COVID-19 pandemic had unfavourable effects on personal, educational activities worldwide. As a result, it was observed that the use of information technologies had increased rapidly. In particular, in dealing with a global healthcare pandemic, online access to information on prognosis, treatment, and patient care was COVID 19 placed on the agenda. The higher eHEALS of physicians compared to nurses may be due to the pandemic pushing physicians to access information on COVID-19 diagnosis and treatment protocols.

This study found that physicians and nurses' eHEALS was higher among those who believed they needed professional psychological support during the COVID-19 pandemic. However, no studies on this topic can be found in the literature. Nowadays, one of the ways people resort to improving their health and accessing health-related information is through eHealth literacy (7, 33). This result may be explained by the fact that eHealth literacy is one of the ways currently used by health professionals to protect their well-being as individuals and the health status of their patients whom they care for and treat.

This study found that eHEALS was higher among participants who perceived the Internet as useful in making decisions about their health and accessing health resources during the pandemic period. This result is similar to the findings of Ergun and Isik's (2019) study (35). However, it may be difficult for individuals who are not health professionals to access a reliable source on the Internet (36, 37). Literature (38, 39) reports that patients' health status is positively influenced when healthcare professionals provide them with internet addresses to access information about the disease. It can be concluded that the right internet resources are beneficial in providing correct health-related information.

Discussion of the comparison of CAS and eHEALS scores

In the study, no significant correlations were found between the scores on CAS and eHEALS ($r = -0.105$; $p = 0.184$) obtained by the participating physicians and nurses. No studies were available comparing the relationship between health professionals' anxiety and eHealth literacy levels in the literature. The results reported by a study on the Polish population (40) are similar to the results reported by this study.

Limitations

The study has some limitations. This study was conducted at a single centre with inpatient and intensive care units in Turkey; only volunteers completed questionnaires. Individuals with worsened anxiety may have been more likely to complete the questionnaires. As this is a descriptive study, it is impossible to establish a clear causal relationship between some characteristics of health professionals and their CAS and eHEALS scores during the pandemic COVID -19. The researchers did not know the CAS and eHEALS scores of the participants during the pre-pandemic period. Another limitation was that although there was a numerical difference in the scales, there was no statistical difference due to the small number of samples.

Conclusion

In conclusion, physicians and nurses with increased anxiety and low eHealth literacy need professional psychological support. Specifically, we suggest that the level of anxiety and eHealth literacy among physicians and nurses involved in the treatment and care of COVID-19 patients should be identified, and the necessary information and professional psychological support should be provided accordingly.

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