

The Relationship Between E-Health Literacy with Post-Traumatic Stress Symptoms of Nurses During the Pandemic

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Abstract

Objective: During the pandemic, health employees carry an emotional burden and specific psychological problems about caring for infected patients. This research was conducted to determine nurses' e-Health literacy levels and post-traumatic stress symptoms status in the COVID-19 pandemic and to examine the relationship between them.

Methods: The study was planned in descriptive, and correlational types, consisting of 172 nurses working in two state hospitals in Turkey during the COVID-19 pandemic. In the study, the whole universe was tried to be reached. The sample selection method was not applied. The Nurse Identification Form, e-Health Literacy Scale (eHEALS), and the Impact of Events Scale-Revised (IES-R) were applied online using GOOGLE forms in the study. Due to a lack of answers, the study started online on June 8, 2020, and ended on September 16, 2020. The Mann-Whitney U test was applied in two-group comparisons, and the Kruskal-Wallis test was used to test differences among three groups. The Mann-Whitney U test was performed to test the significance of pairwise differences using Bonferroni correction to adjust for multiple comparisons. A p-value of <0.05 was considered statistically significant.

Results: The median score of e-health literacy level was 32 for those with undergraduate and graduate education. The median eHEALS score of nurses who think that the internet is very useful in accessing health resources is 32,5. The scale score of the impact of events was found to be high in nurses working in the emergency services, experiencing changes in their social, occupational, or other areas during the epidemic, having different stress factors in the work environment excluding COVID-19. The nurses' e-Health literacy median score is 32, the impact of events scale median score is 30. There is no statistically significant relationship between nurses' e-Health literacy levels and post-traumatic stress symptoms.

Conclusion: Although there is a relationship between e-Health literacy levels and nurses' post-traumatic stress symptoms status, the e-Health literacy status was higher than average, and the severity of post-traumatic stress symptoms was mild.

Key words: Coronavirus, Health Literacy, Nurses, Post-Traumatic Stress

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INTRODUCTION

Pandemics affected mental health in addition to physical health (1). Healthcare staff professionals experience mental problems like anxiety, depressive disorder, post-traumatic stress disorder, sleep disturbance, negative emotions of fear, agony, and concern that themselves or their families are infected with COVID-19 during the pandemic process (2–5). A study conducted in China states that COVID-19 has a significant psychological impact on nurses, and working in the emergency room, worrying about the family, being affected by COVID-19 and negative coping style are risk factors for psychological distress (4). A study conducted with nurses in Turkey during the COVID-19 period determined that nurses feel fear and anxiety, their obsessions increase, and they have depressive symptoms (6).

In addition, care demands on nurses and care assistants have also increased in the community during COVID-19. The nature of care itself and new ways of working are potentially highly stressful for staff. Nurses are not only experiencing an increase in the volume and intensity of their work but are having to accommodate new protocols and a very “new normal.” Other stressors for nurses are limited resources, lack of access to antigen or antibody testing, and discomfort and fatigue from long shifts wearing full personal protective equipment (7). In a study of Filipino Nurses, the majority of nurses reported that they were not fully prepared to manage COVID-19 patients, and only 20.3% reported being willing to care for COVID-19 patients (3). The excessive transmissibility of the COVID-19 virus, deadly outcomes, and direct contact of health workers with the virus due to their occupation leave them at risk of post-traumatic stress disorders (8,9). In a

global sense, the increase in the case and death numbers and thoughts about getting sick or dying increase the stress levels of nurses (2).

Another source of stress in the pandemic process is the spread of misinformation about COVID-19 in the media. During times of public crises, media must ensure to communicate crisis information efficiently and effectively to the general public. But televised transmissions are not fact-checked and are being aired with the single aim to become the number one media outlet and win the rating war (10). Therefore, COVID-19 being a new virus, having little information about it, the unlimited confusing, contradictory, mistaken, speculative, and sensational information about COVID-19 in the media increase the perceived risk, threat, fear, and panic about the pandemic among health workers and cause individuals to imagine the worst scenarios, endanger efforts to manage COVID-19 and experience stress levels which overwhelm coping mechanisms (8,11,12). Communicating accurate and reliable information from trustworthy sources in a timely and effective manner, questioning the accuracy of acquired information, and reducing unwanted media exposure will reduce post-traumatic stress disorders reactions (12,13,14). In this situation, the e-Health literacy concept comes to the fore. It is stated that a high level of e-Health literacy can reduce psychological problems in the literature (15,16). E-health literacy is based on the concepts of health and media literacy and focuses on the information obtained about health in the internet environment, trust levels, ways to, and reasons for accessing information (13,17). Having the basic skills of e-health literacy ensures more effective use of web search strategies and recognition of high-quality

health information (18). In a study, it was reported that 37.8% of nurses had dysfunctional anxiety levels. This may be because nurses have a wider knowledge of the nature of COVID-19, its transmission and symptoms, and measures to prevent the disease than the general population (3). Important responsibilities fall to health employees, especially nurses, about this topic. This research was conducted to determine the e-Health literacy levels which are important factors in reaching accurate and reliable information and post-traumatic stress disorder status of nurses in the COVID-19 pandemic and to examine the relationship between them. This relationship will reveal the importance of e-health literacy in the management of traumatic stress in the COVID-19 process. In addition, it will allow nurses to benefit from e-health literacy in the management of the stress created by the public's misinformation.

METHODS

Study Design

This descriptive and correlational study was completed with nurses working in two state hospitals during the COVID-19 pandemic.

Sampling Population

The Nurse Identification Form, e-Health Literacy Scale, and the Impact of Events Scale-Revised were applied online using GOOGLE forms in the study. The study link was sent via WhatsApp to nurses in Ordu State Hospital and Ordu University Training and Research Hospital in Turkey. Nurses were also reached through the Nurses Association provincial branch Whatsapp group. In the study, the whole universe was tried to be reached. Nurses who agreed to participate voluntarily and worked actively in the field during the COVID-19 process were included in the study. The sample selection method was not

applied. The study started on 8 June and the questionnaire continued until the final answer was received. The survey was terminated on September 16 due to no response. The number of nurses working in the hospitals where the study was conducted was 330. However, 185 nurses were reached during the study period. 13 nurses were not included in the study because they gave incomplete answers to the questions. The study sample consisted of 172 nurses. Study results filled out via Google forms were automatically saved in the system.

Data Collection Tools

Nurse Identification Form (NIF)

The personal information form consisted of two parts. The first part included sociodemographic questions. The second part included questions about the clinics of employment and work experience during the pandemic and department of employment in this study are based on the literature (19-21).

The Impact of Event Scale-Revised (IES-R)

The Impact of Event Scale-Revised (IES-R) was developed by Horowitz et al., (1979) and revised by Weiss and Marmar (1997). The scale aims to determine the stress of traumatized patients. On the scale, there are 22 questions rated between 0 and 4 about the severity of symptoms in the last 7 days. The maximum score that can be obtained from the scale is 88. The IES-R contains 3 subdimensions of re-experiencing (questions 1, 2, 3, 6, 9, 14, 16, 20), avoidance (questions 5, 7, 8, 11, 12, 13, 17, 22) and overstimulation (4, 10, 15, 18, 19, 21 questions). Validity and reliability were done by Corapcioğlu et al. (2006). Cronbach's alpha value was found to be 0.94 (22). The Cronbach alpha value in this study was 0.939. Total IES-R score was graded for severity from normal (0–23), mild (24–32), moderate (33–36),

and severe psychological impact (> 37). A cut-off score of 24 is used to define post-traumatic stress disorder of clinical concern (23). The IES-R scale was confirmed for use in studies about the psychological effect of COVID-19 conducted in Asia (24) and Europe (25) to determine the scope of the psychological impact after exposure to a traumatic event.

The e-Health Literacy Scale (eHEALS)

The e-Health Literacy Scale (eHEALS) was developed by Norman and Skinner (2006). Validity and reliability were done by Tamer Gencer (2017). The scale was developed to determine traditional literacy, health-related literacy, information retrieval, scientific research, media literacy, and computer literacy (13). The scale consists of 2 items about internet use and 8 items that measure internet attitude. The scale items have a 5-point Likert type rating method as "1= strongly disagree, 2= disagree, 3= undecided, 4= agree, 5= agree". The lowest score is 8, and the highest is 40. High scores from the scale indicate high levels of e-health literacy. Cronbach's alpha coefficient of the scale was found to be 0.78 (26). In our study, Cronbach's alpha coefficient of the scale was found to be 0.919.

Statistical Analysis

Statistical analysis was performed using Statistical Package for SPSS 22.0. Descriptive data are expressed as frequency, percentage, mean ranks, median, interquartile range, standard deviation, minimum, and maximum values. The Kolmogorov-Smirnov test and kurtosis-skewness value were used to determine whether the data were distributed normally. For a distribution to be considered suitable for a normal distribution, the skewness and kurtosis coefficients must be between +1 and -1 (27). As mean

total e-Health Literacy Scale and Impact of Event Scale-Revised scores did not show normal distribution, the use of nonparametric tests as appropriate for data analysis. The Mann-Whitney U test was applied in two-group comparisons, and the Kruskal-Wallis test was used to test differences among three groups. The Mann-Whitney U test was performed to test the significance of pairwise differences using Bonferroni correction to adjust for multiple comparisons. A p-value of <0.05 was considered statistically significant. Cronbach's alpha coefficients were used for reliability analyses of the scales. Spearman correlation coefficient test was used to evaluate the relationship between eHEALS and sub-dimensions of IES-R.

RESULTS

According to the sociodemographic data of nurses participating in the study, the mean eHEALS and IES-R points are compared in Table 1. The eHEALS score of nurses under the age of 40 was higher than those aged 40 and above, which was statistically significant ($p<0.05$).

When the eHEALS score was analyzed according to education level, there was a statistically significant difference between those with undergraduate and graduate education levels. Those with postgraduate education had a higher eHEALS score ($p<0.05$) (Table 1).

When the IES-R scores were examined according to the clinics worked during the pandemic process, a statistically significant difference was found between those working in the pandemic service and those working in the emergency services. While 16.6% of the nurses were working in the emergency department, 14% were working in the pandemic service. The IES-R score of nurses working in the

emergency department was higher than those working in the pandemic service and it was statistically significant ($p < 0.05$). There was no difference between other clinics. 47.7% of the nurses experienced a change of place in the institution during the pandemic process. The eHEALS score of nurses who experienced a change of location in the

institution was lower than those who did not change their location ($p < 0.05$). %61.6 of the nurses experienced lost social, occupational, or other activity areas. The IES-R score of nurses who had lost social, occupational, or other activity areas was higher than those who had not experienced any loss and the difference was statistically significant ($p < 0.05$).

Table 1. Comparison of eHEALS and IES-R Points According to Sociodemographic Features of Nurses (n=172)

<i>Sociodemographic Features</i>			eHEALS		IES-R	
	n	%	Mean Ranks/ Median (IQR)	P	Mean Ranks/ Median (IQR)	P
Gender						
Female	152	88.4	88.14/32(2)	.222 ^a	88.10/30(24.75)	.245 ^a
Male	20	11.6	74.03/32(10.25)		74.33/22.50(21.75)	
Age group						
<40	130	75.6	90.67/32(2.25)	.047^a	87.95/30(23.25)	.500 ^a
≥40	42	24.4	73.58/31(5.50)		82.00/27.50(27.50)	
Marital status						
Married	87	50.6	90.89/32(4)	.242 ^a	82.45/31(28)	.291 ^a
Single	85	49.4	82.21/32(2)		90.46/28(21.50)	
Number of children						
0	95	55.2	91.03/32(2)		90.24/32(24)	
1	29	16.8	94.69/32(2.50)	.133 ^b	93.45/36(25)	.244 ^b
2	40	23.3	72.14/31(7.25)		77.09/27.50(26.25)	
3	8	4.7	74.88/31(7.25)		64.00/23.50(16.25)	
Annual income level						
Income less than expenses	37	21.5	75.42/31(11)	.248 ^b	90.41/30(22.50)	.199 ^b
Income equal to expenses	94	54.7	91.13/32(2.50)		90.28/30(24.50)	
Income more than expenses	41	23.8	85.89/32(2)		74.32/22(21.50)	
Educational Level						
High School	7	4.1	96.57/32(6)		97.64/32(19)	
Associate Degree	13	7.6	68.12/31(6.50)	.026^b	86.81/32(25)	.268 ^b
Undergraduate degree	122	70.9	82.44/32(3)		82.18/27(24.25)	
Postgraduate	30	17.4	108.62/32(5.75)		101.35/39(16)	
Duration of Professional experience (years)						
0-9	92	53.5	87.27/32(3)		90.42/32(24)	
10-19	48	27.9	90.45/32(2.50)	.687 ^b	81.67/28(20)	.610 ^b
20-29	29	16.8	79.52/32(4)		80.52/30(31.50)	
30 and above	3	1.8	66.00/22(0)		104.17/32(0)	

Note. IES-R: The Impact of Event Scale; eHEALS: The eHealth Literacy Scale; IQR: Inter Quantile Range

^a Mann-Whitney U test^bKruskalWallis test

p values <0.05 were considered statistically significant and shown in bold.

Of nurses, 25% stated that they witnessed someone who died during the COVID-19 period, and those who witnessed this had statistically significantly higher eHEALS scores than those who had not witnessed this type of death ($p < 0.05$). There was a

statistical difference between nurses who lost their patients and friend in terms of eHEALS score. The eHEALS score of nurses who witnessed the death of their patients was statistically significantly higher than nurses who lost their friends ($p < 0.05$) (Table 2).

82% of the nurses stated that there are different stressors in the working environment. Nurses who stated this had a higher IES-R mean score, which was statistically significant ($p < 0.05$), (Table 2). 59.9% of the nurses thought they were moderate knowledge about COVID-19, and 33.1% were a lot of

knowledge. When the eHEALS score was examined according to the nurses' knowledge about COVID-19, there was a statistical difference between those who think they have moderate knowledge and those who think they have a lot of knowledge.

Table 2. Comparison of Working Features of Nurses During COVID-19 Pandemic With eHEALS Points and IES-R Points (n= 172)

Information related to pandemic	n	%	eHEALS	p	IES-R	p
			Mean Ranks/ Median (IQR)		Mean Ranks/ Median (IQR)	
Department of employment during a pandemic						
Internal medicine	50	29.4	94.94/32(2.25)	.067^b	81.56/29(22)	.016^b
Surgical	46	26.7	68.83/31(4.75)		88.14/29(19.50)	
Operating room	7	4	99.64/32(10)		94.00/40(23)	
Intensive care	16	9.3	102.53/32(0.75)		103.34/43(31.50)	
Pandemic service	24	14.0	82.46/32(6.75)		58.50/21.50(20.25)	
Emergency service	29	16.6	91.31/32(5)		104.43/36(25.50)	
Did you experience location changes in the organization/area during the pandemic?						
No	90	52.3	90.67/32(3)	.047^a	85.82/30(26.25)	.50^a
Yes	82	47.7	73.58/32(2)		87.24/30(22.50)	
Did you experience changes/loss in social, professional, or other important areas of activity in your life during the pandemic?						
No	66	38.4	81.52/32(3.25)	.288^a	73.05/36(24.50)	.005^a
Yes	106	61.6	89.60/32(2)		94.87/24(23)	
Did you witness someone dying due to COVID-19?						
No	129	75	81.25/32(3)	.014^a	83.28/29(25)	.142^a
Yes	43	25	102.26/32(3)		93.16/36(22)	
Degree of closeness n=43						
Relative	5	11.6	19.70/32(9.50)	.034^b	21.50/30(27)	.720^b
Friend	3	7.0	5.17/27(0)		27.67/39(0)	
Patient	35	81.4	23.77/32(3)		21.59/32(23)	
Did you receive any psychological support during the pandemic?						
No	165	95.9	87.20/32(3)	.359^a	85.01/29(24)	.057^a
Yes	7	4.1	70.00/31(7)		121.64/36(23)	
Were there other stress factors experienced in your work environment?						
No	31	18.0	72.72/30(5)	.081^a	63.18/22(17)	.004^a
Yes	141	82.0	89.83/32(2.50)		91.63/32(24.50)	
Stress factors in work environments*						
Confusion about duties	38	12.5	32(6.25)		40(28.50)	
Work intensity	36	11.9	32(3.75)		31(18.25)	
Team incompatibility	37	12.2	32(2.50)		38(19)	
Material	28	9.2	32(8)		39(25)	
Management	31	10.2	32(4)		40(19)	
Pay inequality/wages	48	15.8	32(3)		36(17.50)	
Inadequate personnel	55	18.2	32(4)		40(24)	
Excessive bureaucracy	30	9.9	32(3.75)		30(27.25)	

Note. IES-R: The Impact of Event Scale; eHEALS: The eHealth Literacy Scale; IQR: Inter Quantile Range

^aMann Whitney U Test. ^bKruskal Wallis Test.

*Than one response was given (analysis could not be done due to multiple responses)

p values < 0.05 were considered statistically significant and shown in bold.

Table 3. Comparison of Nurses' Internet Usage With eHEALS and IES-R Scores (n=172)

Internet Use Status			eHEALS		IES-R	
	n	%	Mean Ranks/ Median(IQR)	P	Mean Ranks/Median(IQR)	P
24/7 internet access						
No	5	2.9	48.10/29(4.50)	.073 ^a	100.0/36(22.50)	.538 ^a
Yes	167	97.1	87.65/32(2)		86.10/30(24)	
How beneficial do you think the internet is in assisting you to make decisions about your health?						
Not beneficial at all	5	2.9	50.20/29(3.50)	.050 ^b	94.20/36(7)	.889 ^b
Not beneficial	22	12.8	77.11/32(3.25)		94.39/33(26)	
Undecided	22	12.8	71.68/31(8.25)		81.66/27(24.25)	
Beneficial	117	68.0	93.73/32(3)		86.12/29(25)	
Very beneficial	6	3.5	64.50/24(19.75)		76.42/32.50(27.25)	
How important do you think the internet is for you to access health resources?						
Not beneficial at all	2	1.2	33.75/27(0)	<.001 ^b	98.25/34(0)	.300 ^b
Not beneficial	14	8.1	54.00/29.50(4.25)		74.21/25.50(21.25)	
Undecided	9	5.2	62.50/31(19)		69.67/24(15.50)	
Beneficial	115	66.9	85.82/32(2)		85.02/28(25)	
Very beneficial	32	18.6	113.20/32.50(7)		101.19/40(25.25)	
Information about COVID-19						
A little	12	7.0	72.71/31 (6.25)	.038 ^b	69.67/22(24.25)	.064 ^b
Moderate	103	59.9	80.83/32(3)		93.63/32(25)	
A lot	57	33.1	99.66/32(5)		77.17/26(22.50)	
	n	%	Median(IQR)		n	Median(IQR)
Sources where information related to COVID-19 was obtain*						
Official internet pages	110	25.9	32(3)		29(23.25)	
Unofficial internet pages	72	17.0	32(5)		38(26)	
Scientific e-publications	33	7.8	32(6.50)		37(24)	
In-service training	24	5.7	32(7.75)		39.50(26.75)	
Managers and colleagues	59	13.9	31(4)		30(20)	
Television, radio, newspapers	74	17.5	32(4.25)		30(23.50)	
Panels and Meetings	12	2.8	31(9)		40(36.75)	
Printed journals	21	5.0	32(14)		40(30)	
Social Media	19	4.5	30(12)		40(35)	

Note. IES-R: The Impact of Event Scale; eHEALS: The eHealth Literacy Scale; IQR: Inter Quantile Range.

^aMann Whitney U Test. ^bKruskal Wallis Test

*Than one response was given (analysis could not be done due to multiple responses)

p values <0.05 were considered statistically significant and shown in bold.

Table 4. Median Points on IES-R Subscales and Score, and eHEALS Scores for Nurses

Scales	Median (IQR)	Minimum	Maximum
Intrusion	12 (8.75)	0	29
Avoidance	12 (8)	0	27
Hyperarousal	6 (8)	0	22
IES-R	30 (24)	1	78
eHEALS	32 (3)	8	40

Note. IES-R: The Impact of Event Scale; eHEALS: The eHealth Literacy Scale; IQR: Inter Quantile Range

Table 5. Spearman Correlation Between Thoughts About Internet Use And IES-R Mean Points With eHEALS Mean Points of Nurses

Scales	eHEALS	
	r	p
IES-R	-0.035	0.652
Daily internet use duration	0.234	0.002*
The benefit of the internet in making decisions about health	0.154	0.044*
Importance of the internet for access to health resources	0.343	<0.001*

Note. IES-R: The Impact of Event Scale; eHEALS: The eHealth Literacy Scale; IQR: Inter Quantile Range

*Correlation is significant at the 0.05 level (2-tailed).

When the importance of the Internet in accessing health resources was examined, 1.2% of the nurses did not find it beneficial at all, while 66.9% find it beneficial. There was a statistical difference between those who did not find it beneficial, those who found it beneficial, and those who found it very beneficial. eHEALS score increased as the level of finding benefits increased ($p < 0.05$), (Table 3). Although not included in the table, it was determined that nurses used the internet for an average of 4.18 ± 2.38 hours a day, and a statistically significant relationship was found between internet usage duration and eHEALS internet attitude sub-dimension ($p < 0.05$).

While nurses' IES-R median score (IQR) was 30 (mild (24–32)), their eHEALS score median was 32, (Table 4).

There was no statistically significant relationship between the IES-R and eHEALS scores of nurses ($p < 0.05$). However, a statistically significant and positive close relationship was found between the nurses' eHEALS score and daily duration of internet use ($p < 0.05$), the benefit of the internet in helping make decisions about health ($p < 0.05$), and the importance of accessing health resources on the internet ($p < 0.001$), (Table 5).

DISCUSSION

Paying attention to the individual's e-Health literacy status is effective in improving health outcomes and reducing the individual and social effects of COVID-19. Responsibility for this topic falls to nurses (11). According to the study findings, the eHEALS scores of nurses under the age of 40 were higher than those of nurses aged 40 and over, which was statistically significant. In a study conducted on healthcare professionals in Ethiopia, most of the participants with high eHEALS scores

were between the ages of 21-29 (18), and in Akturk's study of women between the ages of 18-49, the eHEALS score was higher in individuals under 38 years of age (19). In addition, Akturk reported that the eHEALS score decreased as age increased and Knitza et al. reported that there was a negative correlation between age and eHEALS score (19,28).

Considering the educational status of nurses, the e-Health literacy score is higher in those with undergraduate and graduate education levels. One of the factors increasing e-health literacy status in the literature was stated to be educational status (18). A study by Ertas et al. (2019) about adult individuals, those with undergraduate and postgraduate education had higher e-Health literacy (29). Additionally, research into European health literacy including eight EU member states identified that the health literacy points increased as the general educational level increased (30).

When the IES-R points are examined according to the department of employment, the highest points were obtained by emergency service nurses, and this result was identified to be significant. In a study conducted on healthcare workers during the pandemic period, it was stated that those who cared for COVID-19 positive patients and those working in the emergency, intensive care, respiratory and infectious diseases clinics had higher levels of fear, anxiety, and depression (21). Studies showed that HCWs who work in emergency departments, intensive care units, and isolation wards have a greater risk of developing adverse psychiatric outcomes than those in other job departments (21). The high-stress levels among emergency service workers may be associated with this department being

the most active, intense, stressful, and complicated within health organizations (31).

The IES-R points of nurses participating in the study who had experienced changes/loss in social, professional, or other important areas of activity during the pandemic were higher compared to those who had not experienced this and the difference was significant in statistical terms. During the pandemic, nurses have to fulfill duties related to their jobs, in addition to their social responsibility and roles; however, they experienced difficulties in filling social roles as mother, father, child, and partner due to the transmission risk of COVID-19 (32). With the different social roles and responsibilities undertaken by nurses affected by this pressure, they also remained at risk in psychological terms (2).

Professional difficulties experienced by nurses are included among factors increasing stress and in this study, the highest cause of stress was stated to be management problems, inadequate personnel, problems related to duties, followed by material problems, and team incompatibility (2). Nurses exposed to stressors in the work environment had higher mean IES-R points and this was statistically significant. A study by Que et al. stated that health workers were exposed to similar stress factors, while the study by Bostan et al. stated that health employees assessed their working and social conditions at moderate levels and had high anxiety levels (33,34). In addition, the eHEALS scores of nurses who experienced a change of place in the institution were lower than those who did not experience change. In the literature, individuals who perceive their health status to be good physically and mentally had high health literacy scores (19). During the COVID-19

period, nurses worked in circulation between newly-opened pandemic clinics (32).

As the daily internet use of the participating nurses increased, their eHEALS scores also increased significantly. Additionally, the majority of nurses stated that the internet was beneficial and very beneficial for their access to health resources, these nurses had higher e-Health literacy points and were significant in terms of statistics. As the daily internet usage time of the nurses participating in the study increased, their eHEALS scores also increased significantly. Based on this, it was reported that it would be beneficial to initiate cognitive behavioral therapy online or on smartphones, which will have positive effects such as combating anxiety, preventing depression, and alleviating maladaptive coping behaviors by use of relaxation techniques for nurses whose mental health is affected during the pandemic (21).

There was a statistically significant positive correlation identified between the daily internet use duration of nurses with those who thought the internet was beneficial to make decisions about health and those who thought the internet was important for their access to health resources. A study of students in the health sciences faculty found 39.7% of students thought the internet was beneficial for decisions related to health, while 55% stated the internet was important for access to health resources (35). In the literature, as literacy skill levels increase, there are increases noted for perceived usefulness of computers, diversity, the intensity of internet use, and use of computers with duty-focused aims (16).

More than half of nurses stated they had moderate levels of knowledge about COVID-19, and as their stated knowledge levels increased, e-Health literacy

status increased statistically significantly. Similar to the study by Ergun et al., (2020), health employees stated they had moderate levels of knowledge and attitudes about infectious diseases (36). In this study, those obtaining information from scientific e-publications, official websites, and printed journals had higher mean eHEALS points compared to those using other sources

The mean IES-R points for nurses participating in the study were found to be mild levels. A study of nurses working in South Korea during the MERS epidemic observed mild levels of post-traumatic stress disorders, similar to our study (37). A study about the psychological effects of COVID-19 in the general population in Saudi Arabia found that participants had lower levels of post-traumatic stress symptoms than our study results (38). Other studies in the literature observed that the group with the highest stress levels among health employees was nurses (33, 39, 40).

In the study by Ergun et al. (2019), the mean eHEALS points of 25.98 ± 0.27 were close to the average (26). Considering the e-Health literacy scale score range between 8 and 40, it was determined that the e-Health literacy status of the nurses in our study was higher than the average. A study of health employees in Vietnam without contact with COVID-19 stated that the eHEALS points for nurses were 32.7 ± 4.6 , similar to our study (4).

The results of the study did not identify a significant correlation between e-Health literacy and post-traumatic stress symptom. Yang et al. study in China found a statistically significant and negative relationship between e-Health literacy with depression, insomnia, and post-traumatic stress disorder (40). Additionally, stated that well-

developed good levels of e-Health literacy may reduce psychological problems, a study in South Korea found low health literacy level was significantly associated with high levels of depressive symptoms and a study in Vietnam stated that high health literacy may protect against fear (38-40).

Limitations

This study was carried out at two state hospitals. For this reason, the results of the study are limited only to nurses from these hospitals. The nurses participating in the study were reached only online. The nurses participating in the study were reached only online cause of COVID-19. A limitation of this study is that no larger sample can be reached to determine the relations of e-Health Literacy Status with Post-Traumatic Stress symptoms

CONCLUSIONS

The e-Health literacy status of the nurses in the study was higher than average, and the severity of post-traumatic stress symptoms was mild. There is no relationship between e-Health literacy levels and nurses' post-traumatic stress symptoms status. Nurses should develop their health literacy skills in managing the traumatic stress that occurs during the infectious disease process. In addition, due to their important role in public health, they should support the development of e-health literacy skills of the people. To increase the level of health literacy of nurses, it is necessary to raise the level of education, not act in the institution, understand the importance of the internet in accessing health resources, and have above-average knowledge about COVID-19. To reduce the post-traumatic stress symptom of nurses, it is necessary to eliminate the stress factors of work intensity, team incompatibility, material, management, pay inequality, inadequate personnel,

excessive bureaucracy, confusion about duties in the working environment. Studies with larger samples are needed to reveal the relationship between e-health literacy and traumatic stress levels.

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