Comparison of Psychological Distress and Mental Health Literacy Levels of Hospitalized Covid-19 Patients, Individuals Under Quarantine, and Healthy Individuals of Society in the Pandemic
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RESEARCH ARTICLE

COMPARISON OF PSYCHOLOGICAL DISTRESS AND MENTAL HEALTH LITERACY LEVELS OF HOSPITALIZED COVID-19 PATIENTS, INDIVIDUALS UNDER QUARANTINE, AND HEALTHY INDIVIDUALS OF SOCIETY IN THE PANDEMIC

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Abstract

Aim: **This study aimed to find out which group is most affected by psychological distress during the pandemic and determination of MHL level.** ***Methods:*** **This is cross sectional study. Research sample consisted of 814 voluntary people. The study used descriptive data form, Kessler psychological distress scale and mental health literacy scale. Before the study was conducted, permission was obtained from necessary institutions and then research ethics committee approval was obtained. Also, individuals who were contacted through online platforms were informed about the study and provided informed consent forms by clicking "yes" option which showed their voluntary participation. The data were analyzed using descriptive statistics, t-test, analysis of variance, and Mann Whitney U and Kruskal Wallis tests. To detect correlations, the correlation and regression analyses were used.** ***Results*****: The study results showed that 28% of the participants had diagnosable psychological distress (30-50) and individuals who received COVID-19 treatment at hospital had the highest median score (30). The mental health literacy of the participants was low (106) and the lowest scores belonged to individuals under treatment of COVID-19 at hospital. The highest psychological distress was in the Black Sea region and the lowest mental health literacy was in Southeastern Anatolia region. There was a significant very weak positive correlation between psychological distress scale and mental health literacy.** ***Conclusion*****: Individuals who had COVID-19 disease had high psychological distress and low mental health literacy. After the pandemic, the community should be screened for mental illnesses and mental health literacy training should be organized to improve mental health. Nurses need to use their collaborative and advocacy roles regarding mental evaluation, providing consultancy and treatment during nursing care to patients with COVID-19.importance.** ***ASEAN Journal of Psychiatry, Vol. 22(8), October 2021: 1-11.***

Keywords: Psychological Distress, Mental Health, Literacy, Public Health Nursing

Introduction

COVID-19 first outbroke in China, Wuhan in December [1]. COVID-19 spread into many countries and was deemed a global public health problem [2,3]. It was announced as a pandemic on a global scale in March 11, 2020 [4,5]. Since then, a total of 93,529,253 cases have been detected and 2,002,347 people lost their life around the world [6] whereas Turkey has had 2,355,839 cases and 23,325 deaths [7,8]. The new type of COVID-19 has caused political, economic, social and spiritual damage globally. Communities are trying to cope with COVID-19 by taking precautions to prevent the spread of infection. Since the first day of the pandemic, countries try to create their preventive and supportive systems [9]. In particular, prevention of new cases and limiting its spread has been the main objective. In this sense, intensive isolation measures and restrictions have been imposed, which now seems to be necessary. These measures taken during the pandemic have taken and will be taking place at different levels in Turkey as in the world. The isolation measures taken, travel restrictions, lockdown, restrictions/regulations on the operation of businesses have affected people politically, economically, socially and spiritually [10]. The pandemic has exposed the majority of people to obscurity that has never seen before. Such an unfavorable condition has increased people's anxiety and made it difficult for them to control their anxiety. People are afraid of contracting coronavirus or transmitting it to their immediate environment. They also experience despair as they do not how to manage the process. This fear, anxiety, despair and being out of control create negative influence on individuals' mental health. Thus, it is necessary to determine individuals' state of mind and provide first aid based on the results.

During pandemics, the increase in pandemic driven disability, morbidity and mortality causing another pandemic with the increase in mental illnesses is an expected condition [11]. Therefore, determining individuals' mental health status and mental health knowledge during the pandemic is of importance so that they can receive appropriate and timely treatment. Because it should be known that insufficient Mental Health Literacy (MHL) may take healthy years of individuals as it causes delay in the treatment, disruption of treatment process and high stigmatization.

To eradicate negative effects of mental illnesses, the most efficient method is to increase MHL levels of communities. Increasing individuals' MHL level defined as "knowledge and belief to recognize, manage and prevent mental health disorders" positively affects understanding of how to be informed about mental health, choosing treatment, adhering to treatment, and maintaining mental health as it promotes mental health, happiness and wellness. High MHL may decrease attitudes towards mental health professionals and stigmatization/prejudice about the patients/illnesses [12-18]. Also, increasing MHL level can help reducing health expenses, creating/applying effective health promoting policies and allow people to find out their own treatment methods [19]. Thus, the fastest intervention for disorders regarding mental health that may arise due to these reasons is to increase MHL level by health professionals. Increasing MHL level is an intervention that may help early detection of any mental problems and preventing their occurrence. Low level of MHL in a community [20]. Detection of mental health problems that may arise after the pandemic and even prevention of these problems is a priority and important for public health professionals [21-23]. In particular, public health nurses who keep the closest contact with patients and their families have a key role. From this viewpoint, this study aimed to find out which group is most affected by psychological distress during the pandemic and detect its relationship with MHL level.

Materials and Methods

Study design

This is a cross sectional descriptive study.

Study sample

The study was conducted with patients hospitalized in a public hospital, those who were under quarantine and individuals from the society between the dates of June 26-August 26, 2020. There was no sample selection for the research. The sample of the study consisted of all COVID-19 patients hospitalized in a public hospital, all contacted people, all individuals under quarantine in the state dormitory and those who accepted to take part in the study online on voluntary basis between the dates above-mentioned. The research sample consisted of 814 people.

Procedure and data collection

The researcher informed the participants about the aim and expectations of the study by face-to-face interview, pointing that participation was not obligatory. The participants who voluntarily accepted to take part in the study were included. Filling out the questionnaire approximately took 15-20 minutes. The forms for those who were not infected were delivered on online platforms. The participants reached out the questionnaire forms using the web page "https://forms.gle/MaNsFDNPEnt7YbfK9". Those who completed the questionnaires delivered them back to the researcher by clicking on "send" button.

Measures

Personal information form

To determine socio-demographic attributes of the participants, an introductory information form was used.

Kessler psychological distress scale (K10)

The K10 developed by, and adapted to [24]. The study used 10 questions included in the first part of the scale. These questions aim to measure the level of depression levels that an individual has experienced for the last four weeks before the interview and his/her current symptoms. The lowest score is 10 and the highest is 50, with higher scores showing more mental distress. Altun et al. Found sensitivity to be 92% and selectivity to be 90.4% for the K10 score with >20 cut-off point. Altun et al. Found the Cronbach's alpha coefficient to be 0.95. The Cronbach's alpha coefficient was found to be 0.94 in the current study.

Mental Health Literacy Scale (MHLS)

The scale has 35 items and it is a Likert type self-assessment tool based on the total score. Some Likert type scale items allow to do assessment ranging from one to four points, some others allow to make assessment from one to five points. The scale has six subscales; F1: Recognizing diseases (items 1-8), F2: Information on how to access information (items 16-19), F3: Information on risk factors and their causes (items 9 and 10), F4: Information on self-support/treatment interventions (items 11 and 12), F5: Information on accessing professional support (items 13-15) and F6: Attitudes that facilitate seeking appropriate support for mental health diseases and attitudes towards mental health diseases (items 20-35) (stigmatizing). Some items in the scale were reverse coded (items 10, 12, 15, 20-28). The scale score is obtained with the summation of all scores in the answers given to the scale items. The minimum obtainable score from the scale is 35 and the maximum score is 160. According to validity and reliability studies of the scale in its original language, the Cronbach's alpha coefficient was 0.87, while this was found to be 0.89 in the

Turkish adaptation study. The Cronbach's alpha coefficient was 0.79 in the current study.

Ethical considerations

Before the study, approvals were obtained from the Ministry of Health (This study received ethics approval from Scientific Research Studies on COVID-19 by the Ministry of Health – 2020-05-07T01_31_48.xml), from the institutions where the study was carried out, and from the clinical research ethics committee (Ethical Committee of a Public University–Date: 2020, 06, 22 Number 2020/126). Participants were informed about the study and written consent was obtained from those who agreed to participate in the face-to-face questionnaire. Individuals who participated in the social media and online questionnaires were informed with an informed consent form, and those who confirmed the "I agree to participate in the study" statement were able to participate in the questionnaire. Kessler K 10 Scale usage permission was obtained from Altun and his friends *via* e-mail.

Data Analysis

The data obtained from the tools were analyzed using SPSS software (version 23.0, SPSS Inc., Chicago, IL, USA) software. Evaluation of age, level of income and scores from the scales was made using number, percentage, mean, standard deviation, median, min-max and Inter Quantile Range (IQR). For the data not distributed normally, the Kruskal-Wallis and Mann-Whitney U tests were used, while the independent samples t-test and one way ANOVA analyses were used for the data normal distributed. The multiple regression analysis was used to determine some attributes having an impact on the MHLS scale. The findings were at 95% confidence interval and $p<.05$ level.

Results

Of the participants, 102 (12.5%) consisted of individuals under quarantine and 680 (83.5%) were from the community (Table 1). Of them, 519 (63.8%) were female, 311 (38.4%) aged 31-60 years and 502 (61.7) were single. Of them, 239 (29.4%) had an associate degree or higher, 319 (39.2%) were employed, 109 (13.4%) had a chronic disease, 68 (8.4%) had mental health diseases and 154 (4.3%) had substance use (smoked) (Table 1)

Table 1. Descriptive attributes of individuals (n: 814)

Attributes of participants	**n (%)**
Participating groups	
Community	680 (83.5)
Quarantine	102 (12.5)
Hospital	32 (3.9)
Gender	
Female	519 (63.8)
Male	311 (38.4)
Age	
18-30 years of age	483 (59.6)
31-60 years of age	311 (38.4)
61 years of age and above	16 (2.0)
Marital status	
Married	314 (38.3)
Single	502 (61.7)

Educational status	
Primary school-high school	575 (70.6)
Associate degree or higher	239 (29.4)
Employment status	
Yes	319 (39.2)
No	495 (60.8)
Having chronic disease	
Yes	109 (13.4)
No	507 (86.6)
Statistics	
Having mental health diseases	
Yes	68 (8.4)
No	746 (91.6)
Statistics	
Substance use (Smoking)	n (%)*
Yes	154 (18.9)
No	660 (81.8)
Substance use (Alcohol)	
Yes	107 (13.1)
No	707 (86.9)

n: Number, %: Percent. Percentages were taken over n value. Individuals selected more than one option.

During the COVID-19 pandemic, of the participants, 82.7% obtained information from TV, 50.1% from friends or immediate circle and only 33.9% from scientific publications such as articles (Table 2). As symptoms of COVID-19, 94.6% participants had high fever and 98.2% had difficulty in breathing. Of them, 52.7% (317) felt anxious about the transmission of COVID-19 to themselves or a relative, 4.3% (26) felt anxious of having COVID-19 symptoms (cough, difficulty in breathing, etc.), while 7.5% (45) expressed they had no feeling of anxiety related to COVID-19 (Table 2).

Table 2. Distribution of participants' information source, knowledge of symptoms and areas where they have fear/anxiety

Information about the participants	**n (%)***
Knowledge source	
TV (n=672)	
Yes	556 (82.7)
No	116 (17.3)
No (n=679)	
Yes	585 (86.2)
No	94 (13.8)
Other (article, caption, etc.) (n=678)	
Yes	230 (33.9)
No	446 (66.1)
Newspaper (n=680)	
Yes	215 (31.6)

No	465 (68.4)
Friends and other individuals	
Yes	341 (50.1)
No	339 (49.9)
High fever (n=677)	
Yes	642 (94.6)
No	37 (5.4)
Cough (n=679)	
Yes	642 (94.6)
No	37 (5.4)
Difficulty in breathing (n=679)	
Yes	667 (98.2)
No	12 (1.8)
Fatigue (n=679)	
Yes	568 (83.7)
No	111 (16.3)
Diarrhea (n=672)	
Yes	422 (51.8)
No	250 (37.2)
Other (loss of taste, smell, etc.) (n=662)	
Yes	350 (52.9)
No	312 (38.3)
Feeling anxiety about COVID-19	n (%)
Yes	557 (92.5)
No	45 (7.5)
Having fear/anxiety and the reasons	n (%)
Death	77 (12.8)
They or their relatives becoming ill	317 (52.7)
Pandemic getting out of control	83 (13.7)
Returning to normal life	42 (7.0)
Lack of treatment	6 (1.0)
Having the symptoms (cough, difficulty in breathing, etc.)	26 (4.3)
Financial worries (becoming unemployed, inability to find a job)	6 (1.0)

n: Number, %: Percent. Percentages were taken over n value. Individuals selected more than one option.

Table 3 shows the median value of the total score of the scale to be 106 and the median value of the K10 scale to be 22. The scores of individuals from the MHLS subscales are as follows: F1 was 22, F2 was 16, F3 was 5, F4 was 8, F5 was 16, F6 was 50. The number of those scoring 20 points and below from the psychological distress scale was 345 (43.1%) and the number of those scoring 30 to 50 points was 224 (28%). The correlation analyses results between the scales showed a very weak, positive and significant correlation between MHLS and K10 scales (p=0.001) (Table 3).

Table 3. Distribution and correlation of the K10 and MHLS scales

MHLS	Median	Min-Max
MHLS scale	106	66-141
Recognition of diseases (Q1-8)	22	Aug-32
Knowledge of where to seek information (Q16-19)	16	Apr-20
Risk factors (Q9-10)	5	02-Aug
Self-support (Q11-12)	5	02-Aug
Professional help (Q13-15)	8	03-Dec
Stigmatization (Q20-35)	50	26-75
KESSLER	22	Oct-50
K10	n	%
<20 no stress	345	43.1
20-24 mild stress	131	16.4
25-29 moderate stress	101	12.6
30-50 severe stress	224	28
The Scales*	K10	MHLS
K10	1	0.124**
MHLS	0.124**	1

**Spearman's correlation analysis **p=0.001*

According to the results of the study, the scores of females from the K10 and MHLS scales were significantly higher than those of males (p=0.0001). There was no difference between the scores from the K10 between age groups (p=0.075); however, the scores of individuals aged 18-30 years from MHLS's accessing information and stigmatization subscales were higher than other age groups (p=0.0001). The K10 scores of individuals having high school or higher education had higher scores from the K10 scale compared to those with lower education (p=0.031). The scores of individuals having high school or higher education from the recognition of diseases and accessing information subscales of the MHLS were found to be significantly higher than those with lower education (p=0.0001, p=0.002, p=0.04). The K10 scores of individuals living with their parents were significantly higher than those living their spouses and children (p=0.001). However, individuals living alone or with their parents had significantly higher scores than those living with their spouses and children (p=0.0001). The scores of individuals living with their spouses and children from MHLS's accessing information and stigmatization subscales were found to be lower than those living with other individuals (p=0.003, p=0.0001) (Table 4).

Table 4. Distribution of K10 and MHLS scale scores by participants' certain attributes (n: 814)

Attributes of participants	K10 scale	Subscales of MHLS						MHLS Total
	Median (IQR)	Recognition of diseases	Accessing information	Determination of risk factors	Self-support	Professional help	Stigmatization	± SS
		Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	± SS	
Gender								
Female	22.00 (16.0)	23.00 (7.00)	16.00 (5.0)	5.00 (1.0)	5.00 (0.0)	9.00 (3.0)	51.84 ± 7.2	108.44 ± 12.9
Male	20.00	21.00 (8.0)	15.00 (6.0)	5.00 (1.0)	5.00	8.00 (2.0)	49.42 ± 7.2	103.09 ± 12.0

	(14.5)				(0.0)			
U,Z,p/t,df,p	62676.5, -3.695,	66266.5, 2.652,	65880.5, -2.933,	59966.5, -4.852,	71823.0, -1.121,	64624.5, -3.304,	-4.392, 793,	-5.612, 760, 0.0001**
	0.0001*	0.008*	0.003*	0.0001*	0.262*	0.001*	0.0001**	
Age								
18-30 years of age	22.00 (16.0)	22.00 (7.0)	16.00 (5.0)	5.00 (1.0)	5.00 (0.0)	8.00 (3.0)	52.19 ± 7.5	108.63 ± 12.7
31-60 years of age	19.00 (16.0)	22.00 (8.0)	15.00 (6.0)	5.00 (1.0)	5.00 (0.0)	8.00 (2.0)	49.10 ± 7.8	103.40 ± 12.3
61 and above	24.00 (15.3)	21.00 (10.3)	12.00 (6.5)	5.00 (1.0)	5.00 (0.8)	8.00 (3.5)	49.81 ± 7.9	102.37 ± 15.7
H,df,p/F,df,p	5.118, 2,	0.706, 2,	25.00, 2, 0.0001***	5.268, 2,	1.704, 2, 0.417***	6.103, 2,	15.272, 2,	16.048, 2,
	0.075***	0.703***	3>1, 2>1*****	0.072***		0.05***	0.0001****	0.0001****
							1>2*****	1>2*****
Education								
Primary School-High School	21.00 (15.0)	21.50 (7.0)	15.00 (6.0)	5.00 (1.0)	5.00 (0.0)	8.00 (3.0)	50.69 ± 7.8	105.63 ± 12.7
Associate degree or higher	23.00 (17.0)	24.00 (7.0)	16.00 (6.0)	5.00 (1.0)	5.00 (0.0)	8.0 (1.5)	51.61 ± 7.4	108.57 ± 12.9
U,Z,p/t,df,p	59768.5, -0.155,	56154.0, -3.733,	58.176.5, -3.088,	65835.0, 0.435,	66764.5, -0.272,	64892.0, -0.911,	-1.515, 793, 0.130**	-2.891, 760,
	0.031*	0.0001*	0.002*	0.664*	0.785*	0.362*		0.04**
Cohabiting individuals								
Alone	22.50 (16.0)	24.00 (7.7)	17.50 (7.7)	5.00 (1.0)	5.00 (0.0)	9.00 (3.0)	52.14 ± 8.4	108.41 ± 15.1
Parents	23.00 (15.5)	22.00 (6.5)	16.00 (5.0)	5.00 (1.0)	5.00 (0.0)	8.00 (3.0)	52.17 ± 7.4	108.60 ± 13.3
Spouse-children	18.00 (13.0)	21.00 (9.5)	15.00 (5.5)	5.00 (1.0)	5.00 (0.0)	8.00 (2.0)	48.22 ± 7.9	101.84 ± 12.3
Other (dormitory, hotel, etc.)	21.50 (14.2)	22.00 (6.5)	16.00 (5.0)	5.00 (1.0)	5.00 (0.0)	8.00 (2.2)	51.06 ± 6.7	106.55 ± 12.4
H,df,p/F,df,p	16.868, 3, 0.001***	6.916, 3,	14.283, 3, 0.003***	1.440, 3,	3.158, 3, 0.368***	7.568, 3,	14.103, 3,	14.361, 3,
	2>3*****	0.075***	2>3*****	0.696***		0.056***	0.0001****	0.0001****
							1>3, 2>3, 4 >3******	1>3, 2>3******
Professions								
Other	21.00 (16.0)	23.00 (9.0)	15.5 (6.0)	5.00 (1.7)	5.00 (0.0)	8.00 (2.0)	49.71 ± 7.6	104.29 ± 13.1
Health-care	23.00 (15.5)	24.00 (6.0)	17.00 (5.5)	5.00 (1.0)	5.00 (0.0)	9.00 (1.5)	52.78 ± 7.3	111.27 ± 12.0
U,p,Z/t,df,p	9073.5, -1266,	8560.0, -2.476,	8206.0, -3.020,	8977.0, -2.256,	9248.5, -1.687,	9433.5, -1.599,	-3.257, 307,	-4.212, 295, 0.0001**
	0.205*	0.013*	0.003*	0.024*	0.092*	0.110*	0.001**	
Having								

Mental Health Diseases								
Yes	27.50 (12.2)	23.00 (7.2)	16.50 (6.0)	5.00 (1.2)	5.00 (1.0)	8.00 (2.2)	52.35 ± 8.5	108.24 ± 13.8
No	21.00 (16.0)	22.00 (7.0)	16.00 (6.0)	5.00 (1.0)	5.00 (0.0)	8.00 (2.0)	50.92 ± 7.7	106.35 ± 12.8
U,p,Z/t,df,p	17938.5, -3.348,	21498.5, -1.583,	21724.5, -1.843,	24755.5, -0.135 0.892*	21326.0, -2.156,	24600.5, -0.272,	0.423, 793, 0.672**	1.107, 76,
	0.01*	0.113*	0.065*		0.031*	0.785*		0, 269**
Participating Groups								
Community	21.00 (16.0)	22.00 (7.0)	16.00 (6.0)	5.00 (1.0)	5.00 (0.0)	8.00 (2.0)	50.83 ± 7.9	105.84 ± 12.9
Quarantine	19.00 (17.2)	24.00 (5.0)	17.00 (5.0)	6.00 (1.7)	5.00 (0.0)	8.00 (3.0)	52.71 ± 7.1	112.61 ± 12.4
Hospital	30.00 (14.0)	23.00 (3.0)	13.00 (3.0)	5.00 (0.0)	5.00 (0.7)	8.00 (0.7)	48.00 ± 3.6	101.65 ± 5.3
H,df,p/F,df,p	24.110, 2,	18.425, 2, 0.0001***	21.764, 2, 0.0001***	16.047, 2, 0.0001***	6.467, 2, 0.040***	19.321, 2, 0.0001***	5.045, 2,	5.045, 2,
	0.0001***	2>1*****	2>1>3*****	2>1,3*****		2>1,3******	0.007****	0.0001****
	1>2, 3>2******						2>1>3******	2>1>3******

*IQR; Inter Quantile Range, : Mean, SS: Standard deviation, n: Number, %: Percent. *: Mann Whitney U **: Independent Samples T Test, ***: Kruskal Wallis test, ****: One Way ANOVA, *****: Adjusted Bonferroni, ******: Bonferroni*

There was no significant correlation between profession and K10 scores (p=0.290), however, the total scale scores of health care professionals from MHLS (111.27 ± 12.0) were found to be significantly higher than other professions (p=0.0001) The health care professionals had significantly higher scores from all subscales except for the risk factors and self-aid subscales of the MHLS (p=0.0001). The K10 scores of individuals with mental health diseases were significantly higher than those who did not have mental health diseases (p=0.01). There was no significant correlation between having mental health diseases and MHLS, whereas self-aid scores of individuals with mental health diseases were significantly higher than those of individuals who did not have any mental health diseases (p=0.031).

The K10 median value (30) of individuals receiving COVID-19 treatment at hospital was significantly higher than other groups (community: 21, quarantine: 19) (p=0.0001). Individuals under quarantine had the highest score from the MHLS total scale score (112.61 ± 12.4) and this was significantly higher compared to other groups (community: 105.84 ± 12.0 and hospital: 101.65 ± 5.3) (Table 4).

A multiple linear regression analysis was made to explain the effect of K10, gender, chronic disease and having a child on MHLS. The significance level of the model equaling to F value was found to be statistically significant (F=18.593; p<0.05). The K10, gender, education, chronic disease and having a child had significant effect on MHLS (p<0.05) (Table 5).

Table 5. The multiple regression analysis results regarding certain attributes of the MHLS and K10 participants

Dependent Variable	Independent Variable	ß	t	p	VIF	F	Model (p)	Adjusted R^2
MHLS	Fixed	104.62	55.169	0.001		18.593	0.0001*	0.11
	K10	0.121	2.743	0.006	1.036			
	Gender	4.697	4.961	0.0001	1.036			
	Education	3.317	3.349	0.01	1.014			
	Chronic disease	-3.201	-2.291	0.018	1.086			
	Having a child	-5.729	-5.871	0.0001	1.095			

**p<0.05 (0: Male, 1: Female, 0: Primary school, secondary school, high school, 1: Associate degree, undergraduate, post-graduate, 0: Yes, 1: No; 0: No, 1: yes). The formula; MHLS=104.6180+KESSLER*0.121+gender*4.697+education*3.317+chronic disease*-3.201+having a child*-5.729*

The MHLS scores of the participants living in the Southeastern Anatolia region were the lowest and the scores of those living in Aegean region were the highest. This difference was significant between regions (Southeastern<Black Sea, Central Anatolia, Marmara, Aegean) (H=26.379, df=7, p=0.0001). Psychological distress of individuals living in the Black Sea region were significantly higher (Black Sea>Mediterranean, Southeastern) higher (H=20.974, df=7, p=0.004).

Discussion

This study, investigating into finding out the comparison of individuals' psychological distress and MHL levels showed that the participants mostly felt anxious about the transmission of COVID-19 to themselves or a relative and having COVID-19 symptoms (cough, difficulty in breathing, etc.). Similar results were obtained from the study by Rahman MA et al. yet the participants felt more anxiety compared to those living in Australia [25]. It was observed that high level of fear caused higher stress in Australian individuals too during COVID-19 pandemic. The majority of the participants had fear of the distress in case of getting infected by COVID-19.There have been broadcasts indicating that there is anxiety pandemic in Turkey [26,27]. One of the biggest threats during the pandemic and afterwards was stated to be anxiety pandemic. Thus, whether increasing anxiety of people causes mental illnesses after the pandemic should be determined through community screening. However, during the pandemic, individuals should be provided with mental health promoting interventions. Individuals should be informed about how to mark the mental illness symptoms and which methods to use to cope with stress in later processes. Since the majority of individuals used TV as a source of information, providing these trainings and information through the media may provide faster results. In addition to media campaigns, trainings should be provided along with regulations to detect mental illnesses at the first step.

The median value of the psychological distress scale (K10) was found to be 22, while proportion of those who pointed out a diagnosable mental health problem was more than one quarter (28%) of the participants. However, only 8.4% of the participants had such diagnosis. The study conducted in Australia showed that the K10 scores of the participants were 19.6 Rahman et al. This result are similar to those of the current study, yet the psychological distress level (median: 22) was found to be higher in the study conducted in Turkey. Whereas the K10 median value

of the study was found to be similar to that of the study conducted by Altun et al. (21.8 ± 10.7), it was much lower than that 30 of the study conducted with students by Pehlivan. The proportion of mental health diagnosis determined in this study (8.4%) was found to be much lower than the results of the Mental Health Profile of Turkey and this proportion was found to be 28% according to the K10 scale score. Kılıç has stated that there are many people with untreated mental illnesses in the community, which supports the results of this study Kılıç et al. Found the number of individuals that could be diagnosed was 71 (13.0%). The proportion of this result equals to less than a half of the study results. It is very natural that the pandemic process creates different influences in different countries. However, similar results from the studies conducted in Turkey led to think that psychological distress experienced in the pre-pandemic period could be more in Turkey. Besides, it was estimated that almost seven million people in Turkey not diagnosed or treated individuals in Turkey might be at greater risk in terms of mental health problems.

The MHLS score median value was found to be 106; this value was even lower than the median of MHLS total score of the study (106) compared to the cut-off point median score (130) determined by Ratnayake et al., [28]. The MHL level was lower than other studies conducted in other countries Gorczynski et al, Marwood et al, O'Connor et al. The MHL, particularly median scores of students were found to be very low (90) in other studies conducted in Turkey. A low MHL is accepted an emergency public health problem. An increased MHL helps in decision-making process regarding mental health, early diagnosis, increasing diagnosis and treatment success and reducing the severity of the disease Hao et al. Furthermore, since attitudes towards mental health professionals, stigmatization and prejudice on patients, and selection of and compliance to treatment affect other aspects of help seeking process help seeking behaviors for improved mental and mental disorders may increase in the long-term. Among the help seeking rates in the literature are systemic barriers that prevent help seeking such as economic difficulties, limited access to psychiatric services or lack of awareness of the services as well as the role of cultural insecurity and skepticism of psychiatry as a science especially among ethnic minority groups. Nurses have a key role in eliminating all these obstacles and promoting MHL. This is because nurses are health care professionals who have direct contact with the patients and their families. The roles of nurses allow early diagnosis and treatment and prevent bad health consequences due to the lack of treatment [29].

The median value of K10 scale was found to be 22 between the participating groups. The number of those scoring 20 points and below from the psychological distress scale was 345 (43.1%) and the number of those scoring 30 to 50 points was 224 (28%). This result is important as it shows that one fourth of the participants are not diagnosed even if they have diagnosable distress. According to 1998 data in Turkey, nearly seven million people with mental illnesses were not diagnosed or treated. Instead of getting professional help for diagnosis and treatment, individuals with mental illnesses seek help from their family members or friends. Thus, it is necessary to train the whole community about psychobiological bases and effective treatments of mental health disorders [30] and there is need for trainings to increase the MHL level. At that point, factors such as training of the community and primary health care personnel about mental illnesses can be effective in increasing applications and reducing the need for unmet treatments. The first application of Turkish people with mental illnesses is made to psychiatrists and the second is to experts other than these psychiatrists. This shows that mental health services in Turkey should effectively be provided at primary level.

The scores of females from the K10 scale were significantly higher than those of males ($p<.05$) Unlike the results of this study, the results from the study of Pehlivan found the K10 scores of males to be higher Pehlivan et al. The study of Kılıç supporting the results of this study stated that females went through more mental illnesses than males and

those having mental illness at least for once doubled males.

The MHL levels of females were found to be higher than those of males ($p<.05$). Sullivan et al. found that MHL levels of females were higher than those of males Similarly, Furnham et al. Stated that MHL level of females were higher compared to males. Similar results were obtained from the study by Khalil et al. The results of the study were similar to those of Tokur-Kesgin. Higher MHL levels are important as they remove the barriers to help-seeking behavior and increase the facilitating factors to solve mental health problems Sullivan et al. In relation to diagnosis and treatment, men may possibly be regarded a risky group. Poor MHL delays diagnosis and treatment.

According to the analysis results, the MHLS scores of individuals aged 18-30 years besides the scores from accessing information and stigmatization subscales were significantly higher than those of other age groups ($p<0.05$). The study by Khalil found that the score from stigmatization subscale along with age decreased and a positive attitude appeared. This result supports this study and is associated with decreasing influence of social spiritual ideology with increasing age. Business-related responsibilities of these individuals increase their stress level. The scores of individuals with primary school and high school education from the K10, MHLS scales and subscales were significantly higher than those with lower education background ($p<.05$). Some studies state that several variables such as age, education, and even personality traits have an impact on HML level. The low level of education affects MHL; in particular it has an impact on the lack of information about the symptoms and prevalence of mental illnesses Bjorsen HN et al. The K10 scores of individuals living with their parents were significantly higher than those living their spouses and children ($p<.05$). Higher psychological distress levels of those living with their parents may stem from the fact that elder individuals are under greater risk of getting infected by COVID-19. This is because individuals living with their parents feel anxiety of transmitting COVID-19 to their family and in case of its transmission, their parents may have a risk of death. The literature indicates that these individuals may have higher stress and anxiety during the pandemic as they are primary caregivers to their families Langer et al. Found that individuals who live with their spouses and children have higher psychological distress compared to those living alone. This result shows that emotional bonds of family members' presence to individuals affect anxiety levels.

The K10 score of the health care professionals was higher than that of other groups ($p>0.05$) [31]. Found that four fifths of the health care professionals experience anxiety symptoms during the pandemic. The reason was identified to stem from long working hours and fear of infection during the pandemic. While MHL level of health care professionals was found to be higher than other groups but still low, the stigmatization subscale of the MHLS had the highest score. Found that MHL level of nurses except for psychiatric nurses was insufficient, so they recommended those nurses to be included in MHL training programs. The literature suggests that MHL level of health care professionals except for psychiatry is insufficient [32].

The K10 and MHLS scores of individuals with mental health diseases were higher than those who did not have mental health diseases ($p<0.05$). This is because the MHL level allows individuals to easily manage mental health-related symptoms and recognize the diseases [33]. The study results are important in terms of showing that individuals can recognize mental illnesses and receive professional support. However, individuals may have problems with receiving appropriate treatment or compliance with the treatment even when diagnosed [34-36]. As stated by Kılıc help seeking behavior of individuals is affected by the awareness of individuals at the onset of their mental illness, their affected occupational and social functions, economic reasons and physical conditions. Whether individuals seeking professional help in the upcoming periods will get the right diagnosis and treatment or not affects the course of their illness [37-39]. Some of the individuals diagnosed correctly tend to quit the treatment. In this consideration, the pandemic process might have increased severity of mental illness. There may be a need to reevaluate those with mental illnesses and reconsider their treatment. Rahman found that

individuals with a history of mental illness have higher stress level during the pandemic [40-42].

The results showed that the scores of individuals under quarantine from MHLS and subscales were significantly higher than those of other groups. Also, the scores they obtained from MHLS and subscales were significantly higher than those of individuals who were diagnosed to be positive and hospitalized ($p<0.05$) (Table 4). In particular, the scores of individuals under quarantine from MHLS and subscales were significantly higher compared to other groups. The scores of the community from MHLS and subscales were significantly higher than those of individuals who were diagnosed to be positive and hospitalized ($p<0.05$). Although individuals under quarantine had high MHL levels, they had negative behaviors and stigmatizing approach. This shows that even if MHL level increases, stigmatization and negative attitudes can still e ist. Kılıç states that it takes many years to change stigmatization and negative attitudes through MHL trainings where this

dimension of mental health literacy is highly affected by the cultural structure. The MHL levels of the participants were low. Although health care professionals had higher scores than other groups, their scores were still insufficient. In particular, higher stigmatization scores of the health care professionals indicated their negative attitudes towards mental illnesses. This was high in the community and hospital groups too, which shows that the community also has a negative attitude towards mental illnesses. The study conducted by Khalil found that stigmatization of mental illnesses among Saudi people is a major problem. This will lead individuals to feel excluded due to mental illnesses, not to get diagnosed or receive professional help. Instead of seeking professional help for mental illnesses, individuals may seek help of other groups or curatives. To prevent this, people should be trained on MHL and to increase their awareness of mental health and illnesses, community campaigns should be organized, first aid trainings should be provided regarding mental illnesses and MHL trainings should be provided at schools.

The K10 scale median value of the individuals diagnosed with COVID-19 and hospitalized (30.00) and the community (21.00) were significantly higher than that of individuals under quarantine (19.00) ($p<0.05$). Individuals under treatment of COVID-19 at hospital had the highest K10 scores; however they scored the lowest in the accessing information subscale of MHLS. This finding gives the impression that mental influence of the disease on individuals should be examined and followed up at certain intervals post treatment. In particular, people who have recovered from the disease should be considered that they are under risk of mental illnesses. Inability of these individuals to access information makes this more sensitive. Delay in seeking for treatment can cause their loss of workforce, death and disabilities.

The MHLS scores of the participants living in the Southeastern Anatolia region were the lowest and the scores of those living in Aegean region were the highest. Mental health literacy may differ by gender, nation, region or even religion and this may stem from high MHL in western countries and low MHL in Asian countries. What is important here is that the number of individuals with real mental illnesses cannot be determined since they are not diagnosed or do not seek professional help (WHOCPE, nd).

The actual prevalence is not known since the last study about mental health was conducted in 1998 in Turkey. However, the study showed a significant difference in MHL between the Eastern and Western regions of Turkey too. Based on this result, the MHL level should be promoted throughout Turkey, especially in the Eastern provinces and the mental health should be improved. Low MHL level is influenced by cultural influences (Furnham and Swami. Further studies investigating into these effects should be conducted in Turkey too.

Considering the K10 scores across regions, psychological distress of individuals living in the Black Sea region was significantly higher ($p<.05$). Contrary to the results of the study, Kılıç found that mental health diseases are more common in the western regions of Turkey. This result may help to interpret that higher MHL level in western regions of Turkey increases the rate of getting diagnosis. This is because the failure to recognize the symptoms and to use the right psychiatric labels negatively affects help seeking behaviors for psychiatric symptoms

Furnham et al. Determining individuals' attitudes towards these diseases, opinions about professional help seeking behaviors and approach to treatments of mental illnesses across regions is important.

Research Limitations

The research is limited to the sample that can only be reached because it is conducted online.

Conclusion

Individuals who had COVID-19 disease had high psychological distress and low mental health literacy. After the pandemic, the community should be screened for mental illnesses and mental health literacy training should be organized to improve mental health. Nurses need to use their collaborative and advocacy roles regarding mental evaluation, providing consultancy and treatment during nursing care to patients with COVID-19.

Author Contributions

Şenay AKGÜN and Makbule TOKUR-KESGİN designed this study; Hümeyra HANÇER-TOK and Lütfiye Nur UZUN collected the data; Şenay AKGÜN and Hümeyra HANÇER-TOK analyzed the data; Şenay AKGÜN and Makbule TOKUR-KESGİN wrote the manuscript.

Conflict Disclosure

The authors declare no conflicts of interest.

Data Availability

All of the article data are given in the article and in the attached files. The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

1. Ren LL, Wang YM, Wu ZQ, Xiang ZC, Guo L, et all. Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. Chinese medical journal. 2020; 133(9): 1015-1024.
2. Thompson RN. Pandemic potential of 2019-nCoV. Lancet Infect Dis. 2020; 20(3): 280.
3. Thompson RN. Novel coronavirus outbreak in Wuhan, China, 2020: intense surveillance is vital for preventing sustained transmission in new locations. Journal of clinical medicine. 2020; 9(2): 498.
4. https://www.worldometers.info/coronavirus/
5. Health Ministry of Turkey. COVID-19 Situation Report Turkey. COVID-19 Information Platform 2020.
6. https://covid19.saglik.gov.tr/TR-66301/covid-19-rehberi.html
7. Zhou T, Liu Q, Yang Z, Liao J, Yang K. Preliminary prediction of the basic reproduction number of the Wuhan novel coronavirus 2019- nCoV. Journal of Evidence- Based Medicine. 2020; 13(1): 3–7.
8. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, et all. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. The lancet. 2020; 395(10227): 912–920.
9. Tay JL, Tay YF, KlaininYobas P. Effectiveness of information and communication technologies interventions to increase mental health literacy: A systematic review. Early intervention in psychiatry. 2018; 12(6): 1024–1037.
10. Jorm AF, Barney LJ, Christensen H, Highet NJ, Kelly CM. Research on mental health literacy: what we know and what we still need to know. Australian & New Zealand Journal of Psychiatry. 2006; 40(1): 3–5.
11. Furnham A, Swami V. Mental health literacy: A review of what it is and why it matters. International Perspectives in Psychology. 2018; 7(4); 240–257.
12. Göktaş S, Işıklı B, Metintaş S. Mental

Health Literacy. ESTUDAM Journal of Public Health. 2019; 11(3): 424-431.

13. Göktaş S, Işıklı B, Metintaş S. Evaluation of the Turkish validity and reliability of the Mental Health Literacy Scale (MHL Scale). Konuralp Medical Journal. 2019; 11, 424–431.
14. Howard DH, Gazmararian J. Parker RM. The impact of low health literacy on the medical costs of Medicare managed care enrollees. The American journal of medicine. 2005; 118(4): 371–377.
15. Kutcher S, Wei Y, Coniglio C. Mental health literacy: past, present, and future. The Canadian Journal of Psychiatry. 2016; 61(3): 154–158.
16. Qin L, Xu H. A cross-sectional study of the effect of health literacy on diabetes prevention and control among elderly individuals with prediabetes in rural China. BMJ open. 2016; 6(5).
17. Ishikawa H, Yano E. Patient health literacy and participation in the health-care process. Health expectations. 2008; 11(2): 113–122.
18. Durusu Tanrıöver M, Yıldırım HH, Demiray Ready FN, Çakır B, Akalın HE. (2014). Türkiye sağlık okuryazarlığı araştırması. Ankara: Sağlık-Sen Yayınları.
19. Nguyen HC, Nguyen MH, Do BN, Tran CQ, Nguyen TTP, et all. People with suspected COVID-19 symptoms were more likely depressed and had lower health-related quality of life: the potential benefit of health literacy. Journal of clinical medicine. 2020; 9(4).
20. Pehlivan S, Tokur Kesgin M, Uymaz P. Psychological distress and mental health literacy in university students. Perspectives in psychiatric care. 2020; 57(3): 1433-1441.
21. Tokur Kesgin M, Pehlivan Ş, Uymaz P. Study of validity and reliability of the Mental Health Literacy Scale in Turkish. Anatolian Journal of Psychiatry. 2020; 21(2): 5–13.
22. Wooden M. Use of the kessler psychological distress scale in the HILDA survey. 2009.
23. Rahman MA, Hoque N, Alif SM, Salehin M, Islam SMS, et all. Factors associated with psychological distress, fear and coping strategies during the COVID-19 pandemic in Australia. Globalization and Health. 2020; 1–15.
24. Müftüoğlu O. New threat: Anxiety virus. Hurriyet. 2020.
25. Kılıç C. Prevalence of Mental Disorders in Psychiatric Treatment Needs Regarding Turkey And where are we? Community and Physician. 2020; 35: 179–187.
26. Ratnayake P, Hyde C. Mental health literacy, help-seeking behaviour and wellbeing in young people: Implications for practice. The Educational and Developmental Psychologist. 2019; 36(1): 16–21.
27. Hao Y, Wu Q, Luo X, Chen S, Qi C, Et all. Mental health literacy of non-mental health nurses: A mental health survey in four general hospitals in Hunan province, China. Frontiers in psychiatry. 2020.
28. Khalil AI. Stigma versus mental health literacy: Saudi public knowledge and attitudes towards mental disorders. International Journal for Innovation Education and Research. 2017; 5: 59–77.
29. Giusti EM, Pedroli E, D'Aniello GE, Badiale CH, Pietrabissa G, et al. The Psychological Impact of the COVID 19 Outbreak on Health Professionals: ACross-Sectional Study. Frontier in Psychology 2020; 11(1684).
30. Begum R, Choudhry FR, Khan TM, Bakrin FS, Al-Worafi, et all. Mental Health Literacy in Pakistan: A Narrative Review. Mental Health Review Journal. 2020; 25(1): 63-74.
31. Marwood MR, Hearn JH. (2019).

Evaluating mental health literacy in medical students in the United Kingdom. The Journal of mental health training, education and practice. 2019; 14(5).

32. Akbulut Y. The evaluation of health literacy in terms of health expenditures and health services utilization. Health Literacy. 2015; 113–132.
33. Altun Y, Özen M, Kuloğlu MM. Turkish adaptation of Psychological Distress Scale: validity and reliability study. Anatolian Journal of Psychiatry. 2019; 20(2).
34. Council of Higher Education. Youth mental health workshop. Council of Higher Education. 2019.
35. Deng SQ, Peng HJ. Characteristics of and public health responses to the coronavirus disease 2019 outbreak in China. Journal of clinical medicine. 2020; 9(2): 575.
36. Gorczynski P, Sims-Schouten W, Hill D, Wilson JC. Examining mental health literacy, help seeking behaviours, and mental health outcomes in UK university students. The Journal of Mental Health Training, Education and Practice. 2017.
37. Lagner DA, Wood JJ, Wood PA, Garland AF, Lansverk J, et all. Mental Health Service Use in Schools and Non-School-Based Outpatient Settings: Comparing Predictors of Service Use. School Mental Health. 2015; 7(3): 161-173.
38. O'Connor M, Casey L. The Mental Health Literacy Scale (MHLS): A new scale-based measure of mental health literacy. Psychiatry research. 2015; 229, 511–516.
39. Shimizu K. 2019-nCoV, fake news, and racism. The lancet. 2020; 685–686.
40. Sullivan P, Murphy J, Blacker M. The level of mental health literacy among athletic staff in intercollegiate sport. Journal of Clinical Sport Psychology. 2019; 13(3): 440–450.
41. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. The lancet. 2020; 395(10223): 470–473.
42. Wu Q, Luo X, Chen S, Qi C, Long J, et all. Mental health literacy survey of non-mental health professionals in six general hospitals in Hunan Province of China. PLoS One. 2017; 12(7): 1-13.

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