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Investigation of the Effect of Health Literacy on Covid-19 Induced Psychological Distress Levels

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The aim of this research is to examine the relationship between the level of health literacy and the level of Covid-19-induced psychological distress. The research was conducted as an online survey with 429 respondents aged 18 and older living in Turkey. The research data was obtained using Identifying Questions, the Covid-19 Scale of Psychological Distress and the Health Literacy Scale. Statistical analysis of the data was evaluated by T-Test in Independent Groups, One-Way ANOVA and Pearson Correlation Test. Of the participants in the study, 67.1% are 25 years or under and 75.1% are women. The Covid-19 Psychological Distress Scale horror sub-size score average is 4.09 ± 0.87, while the doubt sub-size average is 3.29 ± 0.98. "The information access sub-dimension score average of the Health Literacy Scale is 4.35 ± 0.74, the information understanding sub-size score average is 4.29 ± 0.64, the valuation/evaluation sub-size score average is 4.22 ± 0.66 and the practice/use sub-size score average is 4.26 ± 0.59. Positive directional, meaningful association between the Covid-19 Psychological Distress Scale and the Health Literacy Scale was found ($r = 0.116$, $p < 0.05$). According to this research, as the level of health literacy rises, so does the level of Covid-19-induced psychological distress.

Keywords: Covid-19, Literacy, Epidemic, Psychological Distress, Health Literacy, Pandemic

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1. Introduction

Covid 19 is a global crisis that causes changes in human and social behavior (Demirkıran et al.2021). Individuals differ in their ability to understand, access and act on health advice, and make informed health decisions. (McCaffery et al. 2020). Health literacy is defined as the ability of patients to acquire, process, communicate and understand basic health information and services required to make appropriate health decisions. (Miller, 2016).

Health literacy is an important way to evaluate health-related information to prevent communicable and non-communicable diseases. Studies have emphasized that health literacy is an important strategic approach in order to prevent COVID-19 and to minimize the possible consequences (Do et al. 2020). The COVID-19 pandemic requires the world population to rapidly change behavior in a process where information is constantly changing. The importance of health literacy to reduce the risks of spreading the virus has become more noticeable every day (Cangussú et al. 2020).

Previous studies around the world have shown that the incidence of mental disorders after major disasters is between 10% and 20% (Cai et al. 2020). Many studies conducted during and after epidemics such as SARS in 2003 and Ebola in 2014, it was observed that fear-based overreactive behavior was common among the public Infectious disease outbreaks cause mental health symptoms and disorders (depression, anxiety, post-traumatic stress disorder, insomnia, etc.) in survivors, family members, healthcare workers and other affected community members. Factors in the emergence of these disorders are: risk of being infected, death and infection of loved ones, restraint measures, social isolation and the feeling of loneliness as a result (Cénat et al. 2020).

Anxiety is a mental health issue that is quite common during the current COVID-19 pandemic (Xiao et al. 2020). Studies have shown that health literacy is a protective factor of mental health (Nguyen et al. 2020). Today, individuals obtain medical information from unreliable social media sources. This situation reminds the role of health literacy in the level of psychological distress experienced during the pandemic (Alatawi et al. 2020). In a study by Nguyen et al. in 2020, it was found that health literacy has a protective effect on fear (Nguyen et al. 2020). This study was conducted to reveal the relationship between health literacy level and covid-19 psychological distress.

2. Method

2.1. Purpose of the research

During the epidemic, people have to go through some changes in their normal life flows and take various measures. As a result of these changes, it also affects the mental states of people. The research consists of the aim of revealing how much the level of psychological distress caused by the covid-19 epidemic is related to the health literacy status of individuals.

2.2. Population and Sample of the Research

The population of the research consists of people aged eighteen and above living in Turkey. Convenience sampling method was used in the formation of the sample group in the study. The table created by Yazıcıoglu and Erdogan (2004) was used to determine the sample and sample size. In this context, the

research sample consists of 384 people over the age of eighteen, living in Turkey and randomly selected. 384 participants seem to be sufficient to carry out the study, but 429 participants were reached in our study. The reason for keeping the scope wide is the assumption that people of all ages experience psychological distress caused by the Covid-19 process.

2.3. Data Collection Tools

To measure the level of Covid-19 psychological distress, the two-dimensional Covid-19 Psychological Distress scale, created by Feng et al. (2020) and adapted by Ay, Oruç and Özdogru (2021) will be used. The scale consists of 12 items in total and is two-dimensional. Items 1, 2, 3, 4 and 6 constitute the dimension of fear and anxiety, items 5, 7, 8, 9, 10, 11 and 12 constitute the dimension of doubt. The purpose of the scale is to measure the psychological distress levels of individuals due to covid-19. The total score obtained from all items of the scale reflects the level of psychological distress experienced by the individual related to Covid-19. The scores that can be obtained from the scale range from 12 to 60. A high score on the scale indicates a high level of COVID-19-related psychological distress. No reverse items are used in the scale.

In order to measure the level of health literacy, a four-dimensional health literacy scale created by Toçi et al. (2013) and adapted into Turkish by Aras and Bayık Temel (2017) will be used. The scale consists of 25 items in total. The scale is four-dimensional. Items 1, 2, 3, 4, 5 access to information, items 6, 7, 8, 9, 10, 11, 12 understand information, items 13, 14, 15, 16, 17, 18, 19, 20 appraise The evaluation dimension and the items 21, 22, 23, 24, 25 form the practice/use dimension. The purpose of the scale is to measure the health literacy levels of individuals. Low scores obtained from all items of the scale indicate that the individual's health literacy status is insufficient, problematic and weak, while high scores indicate that it is sufficient and very good. The higher the score, the higher the individual's health literacy level. The scores that can be taken from the scale range from 25 to 125. All items of the scale have a positive structure, there is no reverse item.

2.4. Ethical Aspect of Research

For the conduct of the study Ethical approval was obtained from Selçuk University Health Science Faculty (Date: 31.03.2021, Decision Number: 2021/600). In the first part of the data collection form, the participants were informed about the purpose of the study and it was stated that filling out the form meant that they agreed to participate in the study.

2.5. Data Collection

The online survey technique created via "Google Surveys Forms" was used to collect the data. It took 6-7 minutes for the participants who volunteered to fill out the form consisting of 37 questions in total.

2.6. Data Evaluation

The data collected within the scope of the research were transferred to the computer. The obtained data were analyzed using SPSS 26 statistical package program and the level of significance was accepted as $p<0.05$. The normality distribution of the data was examined with skewness and kurtosis values. As a result of the normality analysis, it was observed that the skewness and kurtosis values were between -2 +2 and it was accepted that the data were normally distributed (George and Mallery, 2010). By using

parametric tests in the analysis of the data; Independent Groups t-test, One-way ANOVA and Pearson Correlation test were used.

3. Findings

Table 1. Findings Regarding the Socio-Demographical Characteristics of the Participants

Descriptive Features		**Number**	**Percentage (%)**
Age	25 and below	288	67,1
	26 and above	141	32,9
Gender	Female	322	75,1
	Malemale	107	24,9
Educational Status	Associate degree and below	81	18,9
	License	261	60,8
	Graduate	87	20,3
Have you had a Covid-19 disease?	Yes	86	20,0
	No	343	80,0
What is your income status?	Minimum Wage and below	93	21,7
	2851 TL - 4500 TL	128	29,8
	4501 TL - 7000 TL	112	26,1
	7001 TL and above	96	22,4
Have you experienced a loss of income?	Yes	228	53,1
	No	201	46,9

67.1% of the 429 people participating in the study consisted of individuals aged 25 and under. In addition, when the genders of the participants were examined, it was observed that 75.1% of them were women, and when their educational status was examined, 60.8% of them were individuals who received undergraduate education. When the data were analyzed on the basis of income, it was concluded that 29.8% of the participants had an income between 2851 and 4500 TL (Table 1).

Table 2. T-Test Analysis for Health Literacy Scale and Its Sub-Dimensions

		Health Literacy Scale	**Sub-Dimensions**			
			Access to information	**Understanding Information**	**Evaluation**	**Practice**
Gender	Male	4,12± 0,67	4,23 ±0,82	4,16 ±0,75	4,04±0,71	4,11±0,74
	Female	4,31± 0,55	4,39± 0,70	4,34 ±0,59	4,27±0,63	4,24±0,67
Test and p value		t=2,54	t=1,97	t=2,24	t=3,18	t=1,67
		p=0,012	p=0,049	p=0,026	p=0,002	p=0,094

Age	25 and below	4,22 ± 0,58	4,27±0,77	4,25±0,65	4,18±0,66	4,17±0,67
	26 and above	4,36± 0,58	4,50±0,65	4,37±0,60	4,29±0,66	4,28±0,72
Test and p value		t=-2,33	t=-3,23	t=-1,87	t=-1,72	t=-1,60
		p=0,020	p=0,001	p=0,062	p=0,086	p=0,110
Loss of Income	Yes	4,22±0,61	4,28±0,80	4,24±0,66	4,19±0,68	4,16±0,70
	No	4,31±0,56	4,43±0,65	4,35±0,60	4,25±0,64	4,25±0,68
Test and p value		t=-1,70	t=-2,11	t=-1,66	t=-0,99	t=-1,31
		p=0,090	p=0,035	p=0,096	p=0,319	p=0,190
Covid Survival Status	Yes	4,16±0,56	4,23±0,80	4,18±0,60	4,14±0,63	4,09±0,62
	No	4,29±0,59	4,38±0,72	4,32±0,64	4,24±0,67	4,23±0,71
Test and p value		t=-1,81	t=-1,67	t=-1,84	t=-1,20	t=-1,70
		p=0,070	p=0,096	p=0,066	p=0,231	p=0,088

As a result of the t-test conducted between the Health Literacy scale and its sub-dimensions and gender, there was a significant difference in the sub-dimensions of accessing information, understanding and evaluating information, but no significant difference was found in the sub-dimension of practice ($p<0.05$). Accordingly, it was found that the health literacy level of women ($\bar{x}$ =4.31) was higher than that of men ($\bar{x}$ =4.12). In the sub-dimensions of the scale, the average scores of women in the sub-dimensions of accessing information, understanding and evaluating information (($\bar{x}$ =4.39) ($\bar{x}$ =4.34) ($\bar{x}$ =4.27) are higher than the average scores of men (($\bar{x}$ = 4.23) ($\bar{x}$ =4.16) ($\bar{x}$ =4.04)) was high. As a result of the t-test conducted between the Health Literacy scale and its sub-dimensions and age, a significant difference was found in the health literacy scale total score and access to information sub-dimensions, but no significant difference was found in the sub-dimensions of understanding, evaluating and practice information ($p<0.05$). Accordingly, it is seen that individuals aged 26 and over ($\bar{x}$ =4.36) have higher Health Literacy levels compared to individuals aged 25 and under ($\bar{x}$ =4.22). In the access to information sub-dimension, the average score of the participants aged 26 and over ($\bar{x}$ =4.50) was higher than the average score of the participants aged 25 and younger ($\bar{x}$ =4.27). When the income losses of the participants due to the epidemic were examined in terms of Health Literacy scale score, Understanding Information, Evaluation and Practice sub-dimensions, no significant difference was found ($p>0.05$). A significant difference was found in the Health Literacy Access to Information sub-dimension ($p<0.005$). Accordingly, in the access to information sub-dimension, the average of individuals who did not lose their income during the epidemic ($\bar{x}$ =4.43) was found to be higher than those who survived ($\bar{x}$ =4.28). According to the results of the t-test between the participants' catching Covid-19 and the Health Literacy scale and its sub-dimensions; There was no significant difference between individuals who had the disease and those who did not ($p>0.05$).

Table 3. T-Test Analysis for Covid-19 Psychological Distress Scale and Its Sub-Dimensions

	Covid Psychological Distress Scale	**Sub-Dimensions**	
		Fear	**Doubt**

Gender	Male	3,37±0,85	3,91±0,86	2,99±1,01
	Female	3,71±0,85	4,15±0,86	3,39±0,94
Test and p value		t=3,49	t=2,51	t=3,66
		P=0,001	P=0,012	P=0,000
Age	25 and below	3,63±0,84	4,09±0,81	3,29±0,96
	26 and above	3,62±0,90	4,09±0,97	3,28±1,01
Test and p value		t=0,09	t=0,01	t=0,13
		P=0,922	P=0,988	P=0,890
Loss of Income	Yes	3,61±0,92	4,09±0,91	3,27±1,05
	No	3,64±0,78	4,09±0,81	3,31±0,89
Test and p value		t=-0,31	t=0,03	t=-0,49
		P=0,754	P=0,973	P=0,622
Covid Survival Status	Yes	3,60±0,79	4,04±0,78	3,28±0,93
	No	3,63±0,88	4,10±0,89	3,29±0,99
Test and p value		t=-0,27	t=-0,56	t=-0,06
		P=0,783	P=0,574	P=0,952

Table 3. shows the t-test results between the Covid-19 Psychological Distress scale and its sub-dimensions and descriptive data. According to the t-test results, a significant difference was found between the Covid-19 Psychological Distress scale and its sub-dimensions and gender ($p<0.05$). Accordingly, the mean score of Covid-19 Psychological Distress of female participants ($\bar{x}$ =3.71) was found to be higher than the mean score of male participants ($\bar{x}$ =3.37). In terms of Fear and Doubt sub-dimensions, the level of women (($\bar{x}$ =4.15) ($\bar{x}$ =3.39)) is higher than that of men (($\bar{x}$ =3.91) ($\bar{x}$ =2.99), respectively. In the t-test results between the ages of the participants and the Covid-19 Psychological Distress levels, no significant difference was observed in terms of age and the Covid-19 Psychological Distress scale score and sub-dimensions ($p>0.05$). As a result of the t-test results between the Covid-19 Psychological Distress scale and the loss of income during the epidemic period, no significant difference was found in terms of the Covid-19 Psychological Distress scale score and sub-dimensions ($p>0.05$). On the other hand, in the t-test results between the Covid-19 epidemic disease and the Covid-19 Psychological Distress scale, no significant difference was found for the Covid-19 Psychological Distress scale scores and sub-dimensions of the participants who had and did not have the disease ($p>0, 05$).

Table4. ANOVA Test Analysis for Health Literacy Scale and Its Sub-Dimensions

	Health Literacy Scale	**Sub-Dimensions**

			Access to information	**Understanding Information**	**Evaluation**	**Practice**
Monthly income	Minimum wage and below[1]	4,14±0,63	4,09±0,87	4,16±0,75	4,12±0,69	4,19±0,63
	2851 TL - 4500[2]	4,25±0,54	4,40±0,65	4,25±0,58	4,18±0,64	4,21±0,67
	4501 TL - 7000[3]	4,29±0,60	4,43±0,68	4,38±0,58	4,21±0,68	4,17±0,76
	7001 TL and above[4]	4,36±0,58	4,44±0,74	4,37±0,63	4,36±0,61	4,26±0,70
Test and p value		F=2,368 p=0,070	F=4,865 p=0,002	F=2,826 p=0,038	F=2,246 p=0,082	F=0,327 p=0,806
			2,3,4>1[a]	3,4>1 [b]		
Educational Status	Associate degree and below[1]	4,17±0,72	4,20±0,91	4,21±0,75	4,13±0,81	4,16±0,71
	License[2]	4,23±0,54	4,33±0,69	4,26±0,58	4,18±0,63	4,17±0,67
	Graduate[3]	4,45±0,56	4,56±0,66	4,46±0,65	4,42±0,54	4,36±0,70
Test and p value		F=5,720 p=0,004	F=5,129 p=0,006	F=4,275 p=0,015	F=5,191 p=0,006	F=2,676 p=0,070
		3>1,2[a]	3>1,2[a]	3>1,2[a]	3>1,2[a]	
Post-Hoc tests a=Scheffe b=LSD						

Table 4. shows the results of the One-Way ANOVA analysis between the Health Literacy scale and its sub-dimensions and the descriptive data of the participants. According to the ANOVA test conducted between the Health Literacy scale and its sub-dimensions and the monthly earnings of the participants; While a significant difference was observed in the sub-dimensions of accessing information and understanding information ($p<0.05$); There was not significant difference between the sub-dimensions of the Health Literacy scale, evaluation and practice ($p>0.05$). According to the results of the Post-Hoc (Scheffe) test conducted to see between which groups this difference is, the participants with the minimum wage and six ($\bar{x}=4.09$) monthly earnings in the access to information sub-dimension have a

lower average than all other groups. Post-Hoc (LSD) test was observed to find out from which groups the difference in understanding information sub-dimension originated. Accordingly, participants with minimum wage and six ($\bar{x}$=4.09) monthly earnings have a lower average than those with 4501 TL and 7000 TL ($\bar{x}$=4.38) and 7001 TL or more ($\bar{x}$=4.37). According to the Anova test, a significant difference was found between education status and Health Literacy scale and its sub-dimensions in terms of education status and Health Literacy scale and sub-dimensions of Access to Information, Understanding Information and Evaluation ($p<0.05$). However, no significant difference was found in the practice sub-dimension ($p>0.05$). It was determined by Post-Hoc (Scheffe) from which groups the difference between educational status and health literacy level originated. According to the results obtained, it was determined that the Health Literacy levels of the participants with a graduate education ($\bar{x}$=4.45) were higher than the participants who studied at the license level ($\bar{x}$=4.23) and the associate degree and below ($\bar{x}$=4.17). According to the results of the Post-Hoc (Scheffe) test conducted between educational status and Health Literacy; In the sub-dimension of access to information, it was observed that the mean of the graduate students ($\bar{x}$=4.56) was higher than the license ($\bar{x}$=4.33), associate degree and below ($\bar{x}$=4.20) participants. According to the results of the Post-Hoc (Scheffe) test conducted between educational status and Health Literacy; In the sub-dimension of understanding information, it was observed that the averages of graduate students ($\bar{x}$=4.46) were higher than those with license ($\bar{x}$=4.26) and associate degree and below ($\bar{x}$=4.21) education. According to the results of the Post-Hoc (Scheffe) test conducted between educational status and Health Literacy; In the evaluation sub-dimension, it was observed that the averages of graduate students ($\bar{x}$=4.42) were higher than those with license ($\bar{x}$=4.18) and associate degree and below ($\bar{x}$=4.13) education.

Table 5. Anova Test Analysis for Covid-19 Psychological Distress Scale and Its Sub-Dimensions

		Covid Psychological Distress Scale	**Sub-Dimensions**	
			Fear	**Doubt**
Monthly income	Minimum wage and below [1]	3,57±0,97	3,98±0,92	3,27±1,09
	2851 TL - 4500[2]	3,67±0,79	4,18±0,78	3,31±0,93
	4501 TL - 7000[3]	3,66±0,79	4,11±0,86	3,34±0,87
	7001 TL and above [4]	3,56±0,91	4,06±0,92	3,20±1,04
Test and p value		F=0,551 p=0,648	F=1,082 p=0,356	F=0,389 p=0,761
Educational Status	Associate degree and below[1]	3,45±1,03	4,00±1,05	3,06±1,15
	License[2]	3,66±0,81	4,11±0,82	3,33±0,92
	Graduate[3]	3,68±0,81	4,14±0,81	3,36±0,93
Test and p value		F=1,998 p=0,137	F=0,652 p=0,522	F=2,647 p=0,072

Table 5. shows the results of the One-Way ANOVA analysis between the Covid-19 Psychological Distress scale and its sub-dimensions and the descriptive data of the participants. According to the ANOVA test conducted between the Covid-19 Psychological Distress scale and its sub-dimensions and the monthly earnings of the participants; No significant difference was found between monthly earnings and the Covid-19 Psychological Distress scale and Fear, Doubt sub-dimensions (p>0.05). According to the results of the Anova test conducted between the education levels of the participants and the Covid-19 Psychological Distress scale; There was no significant difference between the education levels of the participants and the Covid-19 Psychological Distress Scale and Fear, Doubt sub-dimensions (p>0.05).

Table 6. Comparison of the Relationship Between Participants' Health Literacy Scale and Covid-19 Psychological Distress Scale Scores

Dimensions		**Fear**	**Doubt**	**Covid-19 Psychological Distress Scale**
Health Literacy Scale	r	,154**	,076	,116*
	p	,001	,115	,017
Access to Information	r	0,087	,004	,040
	p	,070	,928	,412
Understanding Information	r	,104*	,041	,071
	p	,031	,391	,141
Appraisal / Evaluation	r	,179**	,117*	,153**
	p	,000	,015	,002
Practice / Using	r	155**	,087	,123*
	p	,001	,073	,01
N= 429				

r= Pearson correlation coefficient, **p<0.01 * p<0.05

A value of 0.05 was taken as the statistical significance level. It was determined that there was a significant difference if the significance level was p<0.05, and there was no significant difference in the case of p>0.05 (Kalaycı, 2010). The relationship between the participants' Health Literacy Scale (Mean=4.26, SD=0.59) and Covid-19 Psychological Distress Scale (Mean=3.62, SD=0.86) scores were measured by Pearson Correlation. Accordingly, a low, positive and significant relationship was found between these variables (r(427)=0.116, p<0.05).

4. Discussion And Conclusion

This study was carried out to reveal the psychological distress caused by Covid-19 of adults aged 18 and over living in Turkey, as well as being affected by the level of health literacy. A total of 429 people participated in the research. 75.1% of the participants are women and the remaining 24.9% are men. When we evaluate the participants by age, the participants aged 25 and under constitute 67.1% of the

total participation, while 32.9% represent the participants aged 25 and over. In addition, although the rate of individuals who participated in our study and did not contract the epidemic was determined as 80%, more than half of the total participants, 53.1%, stated that there was a decrease in their financial income during the epidemic (Table 1). The health literacy scale average score of 429 participants participating in the study was found to be $\bar{x}$=4.26. In the study conducted by Schaeffer et al. (2017), the mean score of the Health Literacy scale was found to be $\bar{x}$=4.65 It was observed that the mean was similar in other studies conducted with the same scales. In the scale consisting of 25 questions, the mean score of the Access to Information sub-dimension was found to be $\bar{x}$=4.35, higher than the other sub-dimensions. This shows that Health Literacy is at a more adequate level in accessing information when compared to other sub-dimensions.

The mean score of Covid-19 Psychological Distress of the participants in the study was determined as $\bar{x}$=3.62. When the scale is examined in terms of sub-dimensions, the highest mean $\bar{x}$=4.09 is found in the Fear (Anxiety) sub-dimension. It is thought that the reason for this is the number of cases and diseases exposed every day, as well as the presence of people in the immediate environment and family who died from Covid-19 or had severe illness. In the study carried out in Turkey in 2020 by Gölgeçen and Gölgeçen, the mean anxiety score during the Covid-19 pandemic was found to be 51.93 ± 7.45 (Gölgeçen and Gölgeçen, 2020). In the research conducted by Kalafatoğlu and Yaman in 2021, the Covid-19 fear average of the participants was 20.01 (Kalafatoğlu and Yam, 20201). According to the Pearson Correlation analysis conducted between the health literacy scale and its sub-dimensions and the Covid-19 psychological distress scale and its sub-dimensions, there is a weak positive correlation. Although the increase in the level of health literacy is weak, health literacy affects the level of covid-19 psychological distress. In the Pearson Correlation analysis, the dimension with which the level of health literacy is most closely related was observed as the Fear sub-dimension of the Covid-19 psychological distress scale. Health literacy is recognized as an important way to evaluate health-related information to prevent communicable and non-communicable diseases. In one study, higher health literacy scores resulted in lower fear of Covid-19 and lower depression (Do et al., 2020). In a study on the fear of Covid-19 in medical students, it was seen that a higher level of health literacy can lower the level of fear. Individuals with insufficient and problematic health literacy face problems in accessing and understanding accurate information. In another study, it was emphasized that health education and health literacy education have critical importance in reducing the negative effects of the Covid-19 pandemic (Okan et al., 2020). In the study of Nguyen et al., it was found that health literacy had a protective effect on fear (Nguyen et al., 2020).

In study, a different result from other studies in the literature was found that the level of covid-19 psychological distress will increase with the increase in the level of health literacy. It is thought that this result is due to the fact that individuals are more aware of the possible consequences of covid-19 with the increase in the level of education. In the study conducted by Do et al. in 2020, it was observed that male participants had higher health literacy scores than females (Do et al., 2020). In the master's thesis of Güven in 2016, the factors affecting health literacy were investigated. As a result, it was seen that

female participants had higher health literacy than male participants (Guven, 2016). In Özdemir's (2018) master's thesis, it was aimed to determine the health literacy levels of patients who applied to the family health center. In the study, the rate of insufficient health literacy of female participants was 12.7%, and male participants were 13.0%. When we look at the perfect level of health literacy rate, it is seen that 13.6% of women have an excellent level of health literacy, while 11.5% of men have reached this level. When the general health literacy was examined, no significant difference was found (Özdemir, 2018). In the study published by Gün et al. in 2021, health literacy levels of medical school and health services vocational school students were examined. No significant difference was found between gender and health literacy level (Gün et al., 2021). In our study, it was determined that the $\bar{x}$=4.31 health literacy level of female participants was higher than that of male participants $\bar{x}$=4.12. In addition, in our study, it was found that women had higher scores than men in the sub-dimensions of accessing information, understanding and evaluating information.

Considering the Covid-19 psychological distress levels by gender, a significant difference was found. It was observed that the covid-19 psychological distress levels of the female participants participating in our study were $\bar{x}$=3.71 and higher than the male participants $\bar{x}$=3.37. In addition, in the sub-dimensions of Fear and Suspicion, the average of women's dimensions is higher than that of men. In a study conducted in China during the epidemic, depression was most common in nurses, women, the city of Wuhan and individuals working on the front lines (Shechter et al., 2020). In another study, the factors of heavier psychological burden; being a woman, being a nurse, having a high risk of contracting COVID-19, having a low socioeconomic status (Luo et al., 2020). In a study conducted by Petzold et al. in 2020, it was found that women experience more COVID-19 anxiety than men, and they think about COVID-19 more than men (Petzold et al., 2020). In the study of Guo et al. in 2020, it was determined that women showed significantly higher psychological distress than men (Guo et al., 2020). However, in a study published in 2021 by Cénat et al., it was found that gender did not affect psychological distress. The achievement of this result was explained in terms of the pandemic being a special case (Cénat et al., 2020). In the study of Kalafatoğlu and Yam, no significant difference was found between gender and fear of Covid-19 (Kalafatoğlu and Yam, 2021). Men and women have different cognitive styles. Women may have more fear than men in dealing with the stress factors they experience (Xiao et al., 2020). The reason for this difference is thought to be due to the fact that women are more emotional and sensitive than men.

This study, a significant relationship was found between age and health literacy level. As the age level increases, the level of health literacy increases. In our study, two groups were formed as under the age of 26 and over the age of 25. This situation limits us to comment on whether or not the level of health literacy increases up to which age group. In the study of Do et al., it was found that individuals aged 71-85 have a lower level of health literacy than individuals aged 60-70 (Do et al.,2020). In the study conducted by Güven, the lowest average health literacy was observed in the participants aged 48-60, and the highest level of health literacy was observed in the age group of 28-37 (Güven, 2016). Türkoğlu

(2016) found that the level of Health Literacy decreases with increasing age. Schaeffer et al. (2017) Health Literacy level increases inversely with age. This may be due to generational differences. Today, access to information and learning has become accessible from anywhere without any space restrictions. It is among our expectations that the health literacy level of age groups intertwined with technology is high. When the Covid-19 psychological distress levels were examined by age, no significant difference was found between those aged 25 years or younger and those aged 26 years or older. In the study conducted by Tönbül in 2020, the psychological resilience of individuals between the ages of 20-60 during the Covid-19 epidemic period was examined. In the study, no significant difference was found between age and psychological resilience (Tönbül, 2020). In the study of Nguyen et al., it was found that the probability of depression is high in individuals aged 60 and over who show Covid-19 symptoms. In addition, it was found that individuals with a high level of health literacy are less likely to be depressed than those with a low level of health literacy (Nguyen et al., 2020). In the study by Kalafatoğlu and Yam, the average Covid-19 score of the participants in the 31-45 age range was found to be higher than the participants in the 18-30 age range (Kalafatoğlu and Yam, 2021). It is thought that the reason why there was no significant difference in our study is that covid-19 is a common disease worldwide and therefore poses a threat to all age groups. Existing studies have not always allowed the assessment of differences during past outbreaks (Cénat et al., 2020).

It is known that a low level of health literacy causes poor quality of life, an increase in diseases and devastating health expenditures (Gautam et al., 2020). When the income status and health literacy levels of the participants in our study were examined, a significant difference was found only in the dimensions of access to information and understanding information. According to the sub-dimension of access to information; It has been determined that the average of access to information of individuals earning minimum wage and below $\bar{x}$=4,09 is at a lower level compared to those who earn 2851 TL - 4500 TL $\bar{x}$=4,40, 4501 TL and 7000 TL $\bar{x}$=4,43 and 7001 TL above $\bar{x}$=4,44. Considering the sub-dimension of understanding information, it was observed that the average of individuals earning minimum wage or less $\bar{x}$=4,16 is lower than those earning 4501 TL - 7000 TL $\bar{x}$=4.38 and 7001 TL above $\bar{x}$=4.37. The participants of the study conducted by Yakar et al. in 2019 were patients who applied to a university hospital outpatient clinic. In the study, it was found that income status affects the level of health literacy (Yakar et al., 2019). In addition, the participants were also asked whether they experienced a loss of income during the epidemic, but there was no significant difference in the health literacy levels of the individuals who did and did not experience income loss.

When the earnings of the participants and the levels of covid-19 psychological distress were examined, no significant difference was found between individuals with different income groups in terms of the level of covid-19 psychological distress. In addition, the level of covid-19 psychological distress was examined in terms of whether the participants experienced loss of income during the epidemic process. However, no significant difference was observed between individuals with and without income loss in terms of covid-19 psychological distress levels. When the literature was reviewed, it was found in the study that students with stable family income were less likely to experience psychological problems

during the Covid-19 pandemic (Nguyen et al., 2020). Stressful experiences such as being diagnosed with Covid-19, fear of infecting others, symptoms of the disease, length of hospital stay, especially staying in the intensive care unit and loss of income can cause anxiety and post-traumatic stress disorder (Sher, 2020). Studies have shown that socio-demographic factors (gender, age, unemployment, marital status, etc.) and personal resources (income, etc.) affect the level of psychological distress of individuals (Fernandez et al., 2020). In the study of Cai et al. (2020), it was seen that the Covid-19 epidemic affected the employment status and income of many families, resulting in psychological distress (Cai et al., 2020). A significant difference was found between the education levels of the participants and their health literacy levels. According to the results obtained, it has been revealed that the health literacy level of individuals with a graduate education $\bar{x}$=4.45 is higher than those with license $\bar{x}$=4.23 and associate degree and lower $\bar{x}$=4.17 levels. Based on this, it is concluded that a high level of education means an increase in the level of health literacy. In other words, the level of health literacy should not be considered with only one factor. In a study conducted by Xu et al. in 2020, it was stated that education levels and education systems are important factors affecting public health information literacy (Xu et al., 2020). In previous studies, higher education level and social status levels were associated with higher health literacy scores (Do et al., 2020). When we evaluated the level of Covid-19 psychological distress on the basis of the education levels of the participants, no significant difference was found between the education level and the level of psychological distress. In the study of Cai et al., no significant difference was found between education and psychological distress (Cai et al., 2020). In another study, no significant difference was found between covid-19 fear scores and education levels (Kalafatoğlu & Yam, 2021). In the study of Nguyen et al., it was found that people with a university or higher education level have higher depression rates compared to primary school and illiterate people (Nguyen et al., 2020). It is thought that the reason why the difference was not detected in our study is that the covid-19 virus is a new concept in the world and it brings with it many unknowns. Finally, the participants' previous exposure to covid-19, health literacy and covid-19 psychological distress levels were discussed. However, no significant difference was found in terms of both the level of health literacy and the level of covid-19 psychological distress in individuals who had and did not have covid-19. In the study of Kalafatoğlu and Yam, the covid-19 fear scores of the participants who were diagnosed with Covid-19 were found to be lower than those who were not diagnosed (Kalafatoğlu and Yam, 2021). In other studies, it has been seen that patients with Covid-19 symptoms have a higher probability of depression. High levels of health literacy among individuals with symptoms resulted in less likelihood of depression than those with low levels of health literacy. It has been found that health literacy is an important factor in preventing depression and improving the quality of life in health, especially during the Covid-19 pandemic (Nguyen et al., 2020). Xiao et al. also evaluated the level of health literacy as a protective factor in preventing depression and decline in quality of life in the Covid-19 epidemic (Xiao et al., 2020). A study of quarantined adults found that symptoms of psychological distress were observed. Some of these symptoms are an emotional disturbance, low mood, irritability, insomnia. In a study conducted on children, it was found that the post-traumatic stress disorder scores of quarantined children were four times higher than those of non-quarantined children (Saurabh and Ranjan, 2020). As a result, it was

aimed to determine the relationship between health literacy and covid-19 psychological distress in adults aged 18 and over and to reveal various findings on this subject. Health literacy level; vary depending on gender, age, income status and educational status. The level of Covid-19 psychological anxiety varies depending on gender. In the Covid-19 pandemic, people's health anxiety level has increased, causing general anxiety symptoms to appear. Drissi et al. stated that there is an urgent need to improve health literacy in order to prevent mental health problems. However, the strength and reason of the relationship between health literacy and mental health problems remain unclear. Various studies have shown a positive relationship between health literacy and resilience. However, there are few studies investigating the relationships between health literacy, resilience, and anxiety during the Covid-19 outbreak (Xiao et al., 2020). In our study, there is a weak positive correlation between health literacy and Covid-19 psychological distress scales.

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