MCBU SBED
MANİSA CELAL BAYAR ÜNİVERSİTESİ SAĞLIK BİLİMLERİ ENSTİTÜSÜ DERGİSİ
MANISA CELAL BAYAR UNIVERSITY JOURNAL OF INSTITUTE OF HEALTH SCIENCE
ISSN: 2147-9607

ARAŞTIRMA MAKALESİ
RESEARCH ARTICLE
CBU-SBED, 2022, 9(1): 23-31

COVID-19 Sürecinde Sağlık Okuryazarlığı ile Sağlık Anksiyetesi ve Önleyici Davranışlara Uyum İlişkisi

Relationship Between Health Anxiety And Compliance Preventive Behaviors with Health Literacy in the COVID-19 Process

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Gönderim Tarihi / Received: 31.05.2021
Kabul Tarihi / Accepted: 19.06.2021
DOI: 10.34087/cbusbed.945431

Öz

Giriş ve Amaç: COVID-19 gibi salgın dönemlerinde bireylerin sağlık okuryazarlık düzeyleri oldukça önemlidir. Bu çalışmanın amacı, COVID-19 sürecinde sağlık okuryazarlığı ile sağlık anksiyetesi ve önleyici davranışlara uyum arasındaki ilişkinin incelenmesidir.

Gereç ve Yöntemler: Çalışma tanımlayıcı ve ilişki arayıcı tiptedir. Veriler Ocak-Nisan 2021 tarihleri arasında Google Drive Form aracılığı ile toplanmıştır. Çalışma, Türkiye'nin kuzey batısında bir şehir merkezinde yer alan dahil edilme kriterlerine uyan 428 belediye çalışanı ile yapılmıştır.Veriler, Sosyo Demografik ve Önleyici Davranışlara Uyum Formu, Sağlık Anksiyetesi Ölçeği (SAÖ) ve Türkiye Sağlık Okuryazarlığı Ölçeği (TSOY-32) ile toplanmıştır.

Bulgular: Araştırmaya katılanların yeterli sağlık okuryazarlığına sahip oldukları (35,51 ± 7,13) bulunmuştur. COVID-19 sürecinde bireylerin yeterli sağlık okuryazarlık düzeylerinin önleyici davranışlara uyum konusunda etkili olduğu gözlemlendi. Sağlık Okuryazarlığı puan ortalaması ile Sağlık anksiyetesi puan ortalamaları arasında negatif yönlü anlamlı bir korelasyon olduğu bulundu (r= -0.459, p=0.000).

Sonuç: COVID-19 döneminde özellikle birinci basamak sağlık hizmetlerinde yada halk sağlığı alanında çalışanlar tarafından verilecek sağlık okuryazarlığı eğitim ve danışmanlık hizmetleri, bireylerin sağlık anksiyetesini azaltarak önleyici davranışlara uyumu artırabilir.

Anahtar kelimeler: COVID-19, Halk sağlığı, Sağlık okuryazarlığı, Sağlık anksiyetesi, Önleyici davranışlar.

Abstract

Objective: Health literacy levels of individuals are very important during epidemic periods such as COVID-19. The aim of this study is to evaluate the relationship between adaptation to preventive behavior and health anxiety with health literacy level in the COVID-19 process.

Material and Methods: This study is a descriptive and correlational study. The data were collected between January and April 2021 via Google Drive Form. The study involved 428 people who met the inclusion criteria working in a Provincial Municipality in north-west Turkey. The data were collected using Socio-demographic and compliance to preventive behavior data form, "Turkey Health Literacy Scale" and "Health Anxiety Scale".

Results: Participants in the study were found to have adequate health literacy (35.51 ± 7.13). It was observed that the level of adequate health literacy of individuals during the COVID-19 process were effective complying with preventive behavior. It was found that there was a significant negative correlation between the health literacy score averages and the health anxiety score averages (r= -0.459, p=0.000).

Conclusion: Health literacy education and counseling services especially by those working in the field of primary health care and public health, can reduce health anxiety by increasing the adaptation of individuals to preventive behaviors during the COVID-19 period.

Keywords: COVID-19, Public health, Health literacy, Health anxiety, Preventive behaviors.

1.Introduction

The Coronavirus disease (COVID-19), which emerged in late December 2019, rapidly spreading to many countries and killed nearly two million people during 2020, alarmed the World Health Organization (WHO) and many international health organizations. Shortly after its emergence, it was declared a pandemic by WHO on 11 March 2020 due to its serious effects [1].

In the fight against this pandemic around the world, many policies have been determined by health authorities and preventive measures, information and solution suggestions regarding the prevention of infection have been explained [2]. In order for this information disclosed from correct sources to be understood correctly by individuals, a certain level of health information, that is, sufficient health literacy [HL], is required [3,4]. HL was defined by WHO in 1998 as a concept that represents "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" [5]. Accepting this definition the Republic of Turkey Ministry of Health, defines the concept of HL as "a tool for creating a culture for protecting and sustaining health" [6]. Considering these definitions, it has been reported that adequate level of HL in epidemic diseases such as COVID-19 will contribute significantly to the prevention and control of diseases, adoption of immunization services, compliance with disease prevention measures, and reduction of health-related anxiety [7,8].

Health anxiety is the feeling of anxiety, fear about one's health. In other words, it is a situation where people face many physiological and psychological problems with increasing sympathetic, parasympathetic and endocrine stimuli with anxiety and tension that they experience against the danger that they expect for their health. In this respect, early diagnosis of anxiety and taking precautions are important [9]. Health anxiety may increase when individuals encounter an unexpected and unknown situation such as COVID-19. In this case, it is thought that the HL levels of the individuals will be important. As with other outbreaks and diseases, the COVID-19 pandemic is seen as a problem that can be controlled both by clinical interventions and by the dissemination of HL. The correct understanding of the information made about the process by society and the level of anxiety that may arise will vary depending on the HL level of society. A study conducted on the subject reported that the adequate level of HL in individuals diagnosed with COVID-19 is effective in implementing protective measures and improving the quality of life. In the same study, it was reported that there are a limited number of studies on the subject and the effect on the health anxiety levels of individuals of the this process should also be considered [7]. Therefore, the aim of this study is to evaluate the relationship between adaptation to preventative behavior and health anxiety with HL levels in the COVID-19 process.

2. Material and Methods

2.1. Study Design and Participants

This descriptive and correlational type work was carried out with employees in a municipality located in an urban center in north-west Turkey. The population of the study is 462 employees working for the municipality in an urban center. The sample of the study consisted of 428 employees working for the municipality who met the inclusion criteria. The survey form was created using the Google Drive Form feature, and the link of the survey was sent to individuals via e-mails, WhatsApp and other social media. Participants were encouraged to present the questionnaire to as many people as possible. After receiving and clicking the link, the participants were automatically directed to the information about the study and their approval was obtained. Inclusion criteria in the study; being 18 years or older, using e-mail, WhatsApp and other social media tools and volunteering to participate in the study; the exclusion criteria were determined as not wanting to participate in the study.

2.2. Data Collection Tools

The data were collected using "Socio-demographic and compliance to preventive behavior data form", "Turkey Health Literacy Scale (THLS-32)" and "Health Anxiety Scale (HAS)".

2.2.1. Socio-demographic and compliance to preventive behavior data form: This questionnaire consists of questions about age, gender, education, marital status, socio-economic status, presence of chronic disease, health status assessment and compliance to preventive behavior. This form has been prepared by researchers based on similar studies [7,10].

2.2.2. THLS-32: THLS-32 was developed by a Turkish consortium (2016) consisting of academicians and specialists from the Turkish Ministry of Health [11]. Crohnbach's alfa level of the scale was 0.927. It is a 4 point Likert type questionnaire with responses ranging from very easy (1) to very difficult (4). The lowest score is 32 and the highest is 128. Total scores are standardized to range between 0 and 50. Four levels of health literacy was defined as; 0-25 for "inadequate", >25-33 for "problematic", >33-42 for "sufficient" and >42-50 for "excellent". As a result of the use of the scale in this study, Crohn's alpha value was found to be 0.91.

2.2.3. HAS: This scale consists of 18 questions. Each item scores between 0-3, and a rise in the score indicates an increase in health anxiety. The total score of 20 and above from the first 14 questions was evaluated as increased health anxiety [12]. In this study, scores of 20 and above were considered high health anxiety. As a result of the use of the scale in this study, Crohn's alpha value was found to be 0.89.

2.3. Statistical Analysis

Statistical analysis of the data was performed using SPSS 22.0 (IBM Corporation, Armonk, NY, USA) package program. Descriptive statistics are shown with frequency and percentage, and distribution of variables by scale scores are shown as Mean±SD values. The normality distribution of the continuous data was analyzed with the Shapiro Wilk test and it was found to be normally distributed. According to the normality results, the Independent-Samples t test and One-Way Anova were used among the parametric tests. Tukey test, one of the Post-Hoc tests, was used to determine the differences in variables with more than two groups. In all statistical analysis in the study, p values less than 0.05 were accepted as statistically significant.

2.4. Ethical Considerations

In order to conduct the study, approval of the Ministry of Health with the form number 2020-06-09T16_56_07 to conduct the study during the pandemic period. Then, ethical approval was obtained from Human Research Ethics Committee of Zonguldak Bülent Ecevit University (date/approval no: 31.12.2020/992). After that, approval was obtained from the institution where the study was conducted (date/approval no: 06.01.2021/031). Before the data was collected, the conditions of "Informed Consent" and "Volunteerism Principle" were fulfilled by informing the participants about the purpose and benefits of the research.

3. Results and Discussion

The socio-demographic characteristics of the individuals participating in the study are given in Table 1. 50.4% of the participants are between the ages of 21-40, 79.2% were men, 43.0% were university graduates, 71.0% were married and most of them (89.0%) had a moderate income (Table 1).

Table 1. Socio-demographic Features of the Participants (n = 428)

Socio-Demographic Features	n(%)
Age	
21-40 age	216(50.4)
41-60 age	212(49.6)
Sex	
Female	89(20.8)
Male	339(79.2)
Education level	
Primary/Secondary	154(36.0)
High School	58(13.6)
Graduate	184(43.0)
Postgraduate	32(7.5)
Marital status	
Married	304(71.0)
Single	124(29.0)
Income status	
Good	47(11.0)
Middle	381(89.0)

In Table 2, the health status and COVID-19 process related data of the participants are examined, and it was found that 34.8% have chronic diseases and 54.7% have a moderate health status according to their own assessment. Upon examination of the data of the participants in the study on COVID-19; it was found that 61.4% had partial knowledge about COVID-19, 89.0% were not diagnosed with COVID-19, and 67.3% had daily internet use and TV watching time between 3-5 hours during this period (Table 2).

Table 2. Participants' Information on Health and the COVID-19 Process

Variables	n(%)
Chronic disease status	
Yes	149 (34.8)
No	279 (65.2)
Health status	
Good	194(45.3)
Middle	234 (54.7)
Adequate information about COVID-19	
Yes	137(32.0)
No	34 (6.6)
Partially	257 (61.4)
Diagnosed with COVID-19	
Yes	47 (11.0)
No	381 (89.0)
Family or neighbors diagnosed with COVID-19	
Yes	47 (11.0)
No	381 (89.0)
Daily internet usage or TV watching time in the COVID-19 process	
1-3 hours	32 (7.5)
3-5 hours	288(67.3)
More than 5 hours	108 (25.2)

The average score of the Health Literacy Scale (THLS-32) of the individuals participating in the study was found to be 35.51 ± 7.13 and it was observed that they were in the category of adequate health literacy. When the diagnostic characteristics of the participants were compared with their health literacy levels, it was determined that the health literacy levels showed a statistically significant difference according to age, gender, marital status, education level, presence of chronic disease and health status ($p<0.05$). Further analysis revealed that the health literacy scale scores of those who stated their education level as university and graduate were higher (Table 3). When the health literacy levels of the participants are compared with their knowledge about the COVID-19 process; It was found that there was a significant difference according to the status of having adequate knowledge about the COVID-19 (according to their own assessment) and daily internet use and TV watching during the COVID-19 process ($p<0.05$), (Table 3).

The average score of the HAS of the individuals participating in the study was found to be 21.51±7.34

and was rated as high in health anxiety. When the diagnostic characteristics of the participants were compared with their health anxiety, it was determined that the health anxiety levels showed a statistically significant difference according to age, gender, marital status, chronic disease status and health status, diagnosed with COVID-19 ($p<0.05$), (Table 3).

Table 3. Comparison of the Descriptive Characteristics of the Participants According to Their Health Literacy and Health Anxiety Average

Variables		**THLS-32**		**HAS**	
		Mean±SD	**Statistical Analysis**	**Mean±SD**	**Statistical Analysis**
		35.51±7.13		**21.51±7.34**	
Age	21-40 age	35.71±5.25	**p=0.012***	20.12+6.45	**p=0.025***
	41-60 age	32.98±5.32	t=-2.456[a]	23.14+.4.96	t=-3.568
Gender	Female	35.22±8.66	**p=0.036***	19.26+8.69	**p=0.028***
	Male	*24.68*±10.89	t=-2.141[a]	16.67+8.43	t=-2.856[a]
Marital status	Married	*38.48*±10.15	**p=0.012***	18.41+8.74	p=0.056
	Single	*27.76*±13.05	t=3.396 [a]	15.91+8.13	t=3.125[a]
Education level	Primary /secondary school[1]	*25.19*±1.62		18.81+9.92	
	High School[2]	*28.31*±5.69	**p=0.028***	18.57+8.87	p=0.185
	Graduate[3]	*33.69*±8.13	F=3.929 [b]	17.04+8.14	F=3.674[b]
	Postgraduate[4]	*38.77*±4.44	Difference: 3>1, 4>1	15.17+6.46	
Socio-economic status	Good	*41.08*±0.88	**p=0.001***	16.56+5.64	p=0.065
	Middle	*26.74*±7.00	t=3.705 [a]	18.65+6.78	t=4.123[b]
Chronic disease status	Yes	*39.28±9.90*	**p=0.014***	19,23±8,61	**p=0.001***
	No	*28.09±8.02*	t=2.648 [a]	15,25±6,48	t=3.602[a]
Health status (according to their own assessment)	Good	36.79±6.69	**p=0.003***	15.19+7.13	**p=0.003***
	Middle	33.00±8.54	t=2.980 [a]	17.21+8.65	t=2.980 [a]
Adequate information about COVID-19 (according to their own assessment)	Yes[1]	37.91±5.71	**p=0.001***	15.67+7.64	p=0.245
	No[2]	33.63±8.51	F=3.781 [b]	18.25+6.87	F=3.458[b]
	Partially[3]	35.78±9.12	Difference : 1>3	16.65+5.46	
Diagnosed with COVID-19	Yes	30.47±8.79	p=0.270	21.12+5.45	**p=0.013***
	No	35.01±4.24	t=0.609 [a]	16.85+6.87	t=2.980 [a]
Family or neighbors diagnosed with COVID-19	Yes	36.01±8.64	p=0.851	16.65+5.46	p=0.687
	No	36.47±7.65	t=0.547 [a]	15.67+7.64	t=0.749 [a]
Daily internet usage or TV watching time during the COVID-19	1-3 Hours[1]	35.10±7.66	**p=0.016***	19.56+8.87	p=0.061
	3-5 Hours[2]	*39.28±9.90*	F=3.858 [b]	20.12+5.81	F=3.858 [b]
	More than 5 Hours[3]	*38.09±8.02*	Difference: 2>1, 3>1	21.23+8.36	

[a]Independent samples t- test, [b]One-Way Anova, *$p<0.05$.
THLS-32: Turkey Health Literacy Scale; HAS: Health Anxiety Scale

In Table 4, the relationship of the participants' health literacy levels with the prevention measures applied in the COVID-19 process was examined. According to the table, those who answer yes to the questions on wearing a mask outside ($\bar{x}$= 38.54±8.95), avoiding crowded environments ($\bar{x}$= 36.47±8.79), Washing hands frequently ($\bar{x}$= 36.22±8.76), using disinfectant ($\bar{x}$= 36.79 ±8.69), paying attention to personal hygiene ($\bar{x}$= 37.91±8.71), avoiding shaking hands ($\bar{x}$= 37.74±6.79), avoiding hugging/kissing ($\bar{x}$= 36.43±8.75), not leaving the house unless necessary ($\bar{x}$= 37.26±7.68), paying attention to social distance ($\bar{x}$= 36.30±7.69) and thinking COVİD-19 vaccines were effective ($\bar{x}$= 37.54±1.55) had health literacy score averages higher than those who stated

partially/no. It was found that the difference is statistically significant (p<0.05) (Table 4).

Table 4. Comparison of Health Literacy Averages With Compliance to Prevention Measures Implemented in the COVID-19 Process

Variables		n	THLS-32 Mean±SD	THLS-32 Analysis	Variables		n	THLS-32 Mean±SD	THLS-32 Analysis
Wearing mask outside	Yes	250	38.54±8.95	t=2891[a] **p=0.228***	Avoiding eating in restaurants	Yes	122	36.22±8.76	t=1.778[a] **p=0.076***
	Partially/ No	178	32.97±8.28			Partially/ No	306	33.66±8.18	
Avoiding crowded environments	Yes	190	36.47±8.79	t=2.302[a] **p=0.022***	Not leaving the house unless necessary	Yes	160	37.26±7.68	t=2.909[a] **p=0.018***
	Partially/ No	238	34.01±8.24			Partially/ No	268	32.96±6.86	
Washing hands frequently	Yes	202	36.22±8.76	t=2.987[a] **p=0.029***	Regular exercise	Yes	110	35.22±9.68	t=1.907[a] **p=0.065***
	Partially/ No	226	33.66±8.18			Partially/ No	318	34.98±7.18	
Using disinfectant	Yes	190	36.79±8.69	t=3.018[a] **p=0.036***	Regular sleep	Yes	136	36.12±8.56	t=0.608[a] **p=0.084***
	Partially/ No	238	34.00±8.54			Partially/ No	292	35.02±5.18	
Paying attention to personal hygiene	Yes	216	37.91±8.71	t=3.783[a] **p=0.001***	Avoiding taking public transport	Yes	140	35.32±9.76	t=1.874[a] **p=0.078***
	Partially/ No	212	34.63±8.51			Partially/ No	288	34.56±7.18	
Paying attention tonutrition	Yes	178	36.54±8.95	t=1.777[a] **p=0.685***	Avoiding intercity travel	Yes	215	36.31±8.95	t=1.778[a] **p=0.086***
	Partially/ No	250	4.97±8.28			Partially/ No	213	35.69±8.56	
Avoiding shaking hands	Yes	243	37.74±6.79	t=3.202[a] **p=0.026***	Paying attention to social distance	Yes	178	36.30±7.69	t=3.711[a] **p=0.018***
	Partially/ No	185	33.01±7.24			Partially/ No	250	33.47±8.71	
Avoiding hugging/ kissing	Yes	241	36.43±8.75	t=3.014[a] **p=0.004***	Thinking COVID-19 vaccinesare effective	Yes	262	37.54±1.55	t=3.456[a] **p=0.001***
	Partially/ No	187	32.81±7.98			Partially/ No	166	33.97±2.28	

[a] Independent samples t- test, *p<0.05,
THLS-32: Turkey Health Literacy Scale

In the study, as the level of health literacy of the participants increased, the overall health anxiety scores decreased, and it was found that there was a significant negative correlation between the THLS-32 score averages and the HAS score averages (r= -0.459, p=0.000), (Table 5).

Table 5. The Relationship Between Health Literacy and Health Anxiety

Scales	THLS-32 Score				Analysis
	Inadequate	Problematic	Sufficient	Excellent	
HAS score	18.62±8.10[a]	16.65±6.98 [a]	15.46±7.01 [a]	14.22±7.37 [a]	**p=0.009** **[a]3.817**
	r=-0.459		**p=0.000***		

*Pearson correlation; [a]One-Way Anova; p<0.05

With the rapid spread of the COVID-19 disease and its transformation into a pandemic, individuals' acquisition of information about this new virus and adaptation of this information to daily life has also accelerated. Therefore, individuals' ability to obtain correct information from correct sources, to apply the information they have acquired in daily life and their HL have become a very important factor [3]. HL includes the ability of individuals to understand and apply the health knowledge acquired in order to make appropriate decisions on their own, especially in emerging health problems [13]. In this complex COVID-19 process, individuals encountered many medical terms they had not heard before and tried to make sense of these concepts, so some individuals reacted to the process in an overreaction and others at a reckless level. However, in order to control the epidemic, the whole society must understand and implement the measures to be taken. This situation will only occur if the society has a certain level of HL, and it has been reported that the fight against the epidemic will be easier with a high level of HL in the society [14]. This study examines the relationship between compliance with preventive behaviors and health literacy during the COVID-19 process. The average point of the THLS-32 of the individuals participating in the study was found to be 35.51±7.13, and it was observed that the participants were in the sufficient HL category according to the scale evaluation. Turkey does not offer a good table in terms of HL levels. 68.9% of the society in a study conducted by the Ministry of Health in Turkey has been determined to be at inadequate and problematic-limited health literacy level [6]. When we evaluated this result, it is seen that approximately seven out of ten people living in our country had a limited HL level. Similarly, as a result of a study conducted by Sorensen et al. examining the average HL of nine European Union member countries, it was found that 47.5% of the participants had insufficient or problematic HL [15]. In this study, it is thought that the fact that the health literacy level was above average was due to the fact that the majority of the participants had high school and above education level, and in a similar study, it was found that the level of SSI was higher in undergraduate and above education groups compared to other groups [10].

When the socio-demographic characteristics of the participants were compared with their health literacy levels, statistically significant differences were found in their health literacy levels according to age, gender, marital status, education level, economic status, health status and presence of chronic disease. In the study, it was observed that those between the ages of 21-40 had higher scores on the HL scale and the scale scores decreased as the age increased. Actually results of the "Turkey HL Report" held across Turkey indicate that 18-24 age group has the lowest number of individuals at insufficient level and it was determined that advancing age decreases the level of HL [6]. So it is seen that group best equipped in terms of HL of young people in Turkey. The reason for this is the low rate of benefiting from higher education among older age groups. Similar results can be found in the research conducted by Sorensen et al. (2015) on nine member countries of the European Union. In this study, it was concluded that with the increasing age, HL competence decreased [15]. These results are similar to the result of the age variable in the study, and it can be said that the young population with a high level of knowledge about the COVID-19 process will also have higher compliance to preventive behaviors, and the low levels of HL of individuals aged 65 and over will make them more vulnerable during the COVID-19 process.

In the study, it was concluded that women have a higher level of HL compared to men. Results of a similar study demonstrated that women have higher HL levels compared to men [16]. The relationship between gender and HL varies from study to study, and different from this study results, there are also studies showing that men have higher HL levels than women [17,18]. In the study, it was also found that those who stated their marital status as married had higher HL levels than singles. In similar studies conducted for determining HL, it was found that the level of HL of unmarried people was lower [19,20].

In the study, it was determined that the level of education affects the HL, especially the individuals with undergraduate and graduate education have higher HL levels, and it is seen that as the socio-economic status declines, the level of HL also decreases. As a matter of fact, similar results were found in the study of Sorensen et al., it was determined that the socio-economic level decreased with the low level of education and that the HL level was insufficient [15]. This situation is thought to be due to the fact that individuals with low educational and socio-economic levels are deprived of tools and education to increase their health literacy. It has been stated that the level of education and the high socio-economic level will contribute positively to the increase of compliance with the behaviors aimed at preventing the COVID-19 epidemic by directly affecting the HL level [21]. In a similar study, it was stated that societies may remain ineffective in the epidemic and disease processes they encounter due to the low education level and socio-economic status [22]. The way to solving these difficulties and inadequacies lies in increasing the education level of the society, achieving a general improvement in socio-economic status, increasing the income level in economic terms, and accordingly, raise the HL to sufficient and perfect levels.

The insufficient level of HL hinders the protection individuals from diseases and epidemics. As a matter of fact, as seen in this study, those who stated their health status as good according to their own evaluations are found to have higher HL levels. In the data obtained as a result of the examination of the studies carried out, it has been found that individuals with low HL are also in poor health [6,15]. The study also found that individuals with chronic diseases have higher HL levels. It has been announced to the public through all media and scientific studies that the ongoing COVID-19 process has much more negative effects on individuals with chronic diseases. These individuals were warned to be more careful, and it was reported that inadequate HL in chronic

diseases is associated with various adverse health consequences [23]. For this reason, it is quite natural for participants with chronic diseases to develop sensitivity to the subject and it is thought to have a positive effect on the level of HL.

With the rapid transformation of the COVID-19 disease into a pandemic, people started to spend more time on various platforms to learn about this new virus and resulting the process [24]. The HL level of individuals has become even more important in this period, as some of this newly learned information may also include misleading recommendations and practices that go as far as information pollution and negatively affect public health [14]. In this study, it was determined that the HL score average of the participants who had information about COVID-19 and reported daily internet use or television watching time increased during this period. Although there are limited studies on the subject in the literature, as a result of a study conducted during the COVID-19 process, it was determined that individuals who follow the information and developments about COVID-19 in the country and in the world have a higher level of HL [25].

Anxiety can be defined as the state of uneasiness caused by any fear of danger [26]. On the other hand, health anxiety is a psychological experience that triggers the physical and emotional anxiety symptoms that occur with the thought that the individual is under a great threat to her health [27]. Health anxiety is a condition that can be observed frequently and is not considered pathological unless its frequency and severity affect human life. In the period of the sudden pandemic, it has been observed that people's anxiety levels have increased considerably [28]. In the COVID-19 period, the health anxiety of the individuals participating in the study was found to be higher than the scale evaluation. In studies similar to this study, it was determined that individuals have high health anxiety during the COVID-19 period [29,30). When the health anxiety levels of the participants were examined according to demographic characteristics, the health anxiety level was found to be significantly higher in women, in individuals with chronic disease and in individuals with a moderate health status according to their own evaluation, and those diagnosed with COVID-19, In a similar study conducted to determine the health anxiety levels of individuals during the COVID-19 period, it was determined that the health anxiety level was high in women, in the advanced age group and in those who were diagnosed with COVID-19 or their relatives [30].

One of the important factors affecting health anxiety is having a chronic illness. In this study, it was found that those with chronic diseases had higher health anxiety scores. It has been determined that causes such as physical limitations and a decrease in quality of life in individuals with chronic disease can increase health anxiety [31]. A study similarly found that people with chronic disease had significantly higher health anxiety levels [32].

In the study, participants who comply with preventive behaviors related to COVID-19 disease such as wearing masks outside, avoiding entering crowded environments, washing their hands frequently, using disinfectant/cologne, paying attention to individual hygiene, avoiding shaking hands and hugging/kissing, not leaving the house unless necessary, paying attention to social distance and thinking that the COVID-19 vaccine is effective are found to have higher HL levels. In the COVID-19 process, especially in the public service announcements prepared by the Ministry of Health, the most important measures to be followed during the illness process are openly underlined as; wearing a mask, respecting social distance, paying maximum attention to personal hygiene, washing hands frequently and not leaving the house unless necessary. Consequently, the awareness of the individuals on the subject has increased and these protective behaviors have become more observed [33]. In a study conducted by Lin et al during the COVID-19 pandemic process, the keywords "hand washing" and "wearing a mask" were searched in an internet-based search engine, and it was determined that there was a negative decrease between the keyword “handwashing” and the speed of COVID-19 spread [34]. As a result of the study, it was emphasized that frequent washing of hands is related to the health literacy level of the society and should be among the policies that can be applied to reduce the epidemic [34]. Again, a similar study conducted by Papagiannis et al., during the COVID-19 process found that high knowledge score is largely associated with the application of protective measures by individuals [35]. It is seen that this study results are similar to these results.

Compliance to the behaviors to protect against the COVID-19 epidemic can be considered as an important indicator of the HL level of individuals. It is believed that important strategic public health approaches are needed to ensure the sustainability of these behaviors. In the results of the study, which examined the relationship between HL and adherence to protective behavior before the COVID-19 epidemic, it was stated that individuals with low HL levels had lower infectious diseases prevention behavior and awareness and that initiatives should be taken to increase the level of HL in the society to control infectious diseases [10,36].

It is known how effective the vaccines are to prevent infectious diseases and how important the health literacy of individuals is for the applicability of the vaccine [8]. It has been reported that insufficient health literacy leads to a low level of knowledge on vaccines, which leads individuals to have a negative attitude towards vaccination [37,38]. In a meta-analysis study examining the effect of health literacy on preventing infectious diseases, it was determined that protection behaviors such as vaccination and hand hygiene were related to HL, and individuals with insufficient HL adopted and applied protection measures less [38]. Ren et al., found in their study that the level of HL is related to vaccination and there’s positive and significant relation between HL and having influenza vaccines. Similar to the results of other

studies, this study found that the HL levels of the participants who thought that vaccination during the COVID-19 process would be effective are higher [37]. It is thought that having a high HL level will provide individuals with accurate information about vaccination and thus, creating social immunity and providing significant advantages in combating infectious diseases.
When we examine the relationship between health anxiety and health literacy in the study; It has been determined that as the level of health literacy increases, health anxiety decreases. While the poor health literacy category is the group with the highest HAS total score average, the excellent health literacy category is the group with the lowest total score average. A study found that there is a significant relationship between low health literacy level and high anxiety [39]. In the literature review, no study was found on the correlation between health literacy and health anxiety. This research may be the first in this regard.

4. Conclusion

Health literacy is among the most important issues of public health. This study shows that there is a significant relationship between health literacy levels of individuals and their compliance with preventive behaviors and health anxiety. The results of this study and similar studies show that high health literacy levels of individuals will facilitate the reduction of anxiety level by increasing compliance with preventive measures. In addition, the course of the epidemic may be negatively affected by the misinformation of individuals with insufficient health literacy about the pandemic process, and it may increase the levels of anxiety, anxiety and anxiety of the individuals. In short, in the period of COVID-19, increasing the health literacy levels of people, reducing their health anxiety, supporting people psychologically will facilitate adaptation to the measures and new lifestyle. In order to increase health literacy, especially those working in the field of public health should be provided with education and consultancy services on the subject.

5. Acknowledgements and Disclosures

The author would like to thank those who voluntarily participated in this study.
In order to conduct the study, approval of the Ministry of Health with the form number 2020-06-09T16_56_07 to conduct the study during the pandemic period. Then, ethical approval was obtained from Human Research Ethics Committee of Zonguldak Bülent Ecevit University (date/approval no: 31.12.2020/992). After that, approval was obtained from the institution where the study was conducted (date/approval no: 06.01.2021/031).
Study design: TAG; data collection and analysis: TAG and, manuscript preparation: TAG.

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