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EXAMINATION OF THE RELATIONSHIP BETWEEN THE HEALTH LITERACY LEVEL AND HEALTH ANXIETY OF INDIVIDUALS DURING THE COVID-19 PANDEMIC

COVID-19 PANDEMİSİ SÜRECİNDE BİREYLERİN SAĞLIK OKURYAZARLIK DÜZEYİ İLE SAĞLIK KAYGISI ARASINDAKİ İLİŞKİNİN İNCELENMESİ

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ABSTRACT

Aim: This study aims to determine individuals' health literacy and anxiety levels and their relationship.

Methods: In the study, the TSOY-32 scale developed by Okyay and Abacıgil (2016) on behalf of the Ministry of Health, and the Health Anxiety Inventory (Short Version), which was translated into Turkish by Aydemir et al. (2013) for validity and reliability study, were used. The study population consists of individuals over 18 living in Isparta province. The sample size determined within the scope of the study is 384 people, and 401 participants were reached. SPSS 22 was used to analyze the collected data. Relationships between variables were examined via t-test, ANOVA analysis, correlation and regression analysis.

Results: A significant difference was observed from comparing the scores of hypersensitivity to physical symptoms and anxiety subscale of the health anxiety scale with the chronic disease/disability status and age groups of the participants. No significant correlation was found between health literacy index scores and health anxiety scores. After the regression analysis to question whether the level of health literacy is a significant determinant of individuals' health anxiety level, no significant difference was observed.

Conclusion: The health literacy index score of the participants was found to be 32.13. In literature, this result is considered a problematic/limited level of health literacy. As a solution, it may be possible to increase the general literacy level in society first and then take measures to increase health literacy by the health authorities. The health anxiety level of individuals was found to be mild. These findings show that, during the COVID-19 pandemic, health literacy does not have any effect that increases or decreases health anxiety level.

Keywords: Health Literacy, Health Anxiety, COVID-19 Pandemic

ÖZ

Amaç: Bu çalışmada bireylerin sağlık okuryazarlığı ve sağlık kaygısı düzeylerinin belirlenmesi ve aralarındaki ilişkinin incelenmesi amaçlanmıştır.

Yöntem: Çalışmada, Okyay ve Abacıgil (2016) tarafından Sağlık Bakanlığı adına geliştirilen TSOY-32 ölçeği ile Aydemir ve arkadaşları (2013) tarafından Türkçeye çevrilip geçerlilik güvenilir çalışması yapılan Sağlık Kaygısı Envanteri (Kısa Form) kullanılmıştır. Çalışma evreni Isparta ilinde yaşayan 18 yaşından büyük bireylerden oluşmaktadır. Çalışma kapsamında belirlenen örneklem büyüklüğü 384 kişidir ve 401 katılımcıya ulaşılmıştır. Toplanan verilerin analizinde SPSS 22 programı kullanılmıştır. Değişkenler arasındaki ilişkiler t testi, ANOVA analizi, korelasyon ve regresyon analiziyle incelenmiştir.

Bulgular: Katılımcıların kronik hastalık/engellilik durumu ve yaşları ile sağlık kaygısı ölçeğinin bedensel belirtilere aşırı duyarlılık ve kaygı boyutu puanlarının karşılaştırılması sonucunda anlamlı bir farklılıkla karşılaşılmıştır. Sağlık okuryazarlığı indeksi puanları ile sağlık kaygısı puanları arasında anlamlı bir ilişki gözlenmemiştir. Sağlık okuryazarlığı düzeyinin bireylerin sağlık kaygısının anlamlı bir belirleyicisi olup olmadığını sorgulamak amacıyla yapılan regresyon analizi sonucunda anlamlı bir farklılık gözlenmemiştir.

Sonuç: Katılımcıların sağlık okuryazarlığı indeks puanları 32,13 olarak tespit edilmiştir. Literatürde bu sonuç, sağlık okuryazarlığının sorunlu/sınırlı düzeye karşılık geldiği şeklinde yorumlanmaktadır. Çözüm olarak, önce toplum genelinde genel okuryazarlık düzeyinin yükseltilmesi, ardından sağlık otoriteleri tarafından sağlık okuryazarlığının artırılmasına yönelik tedbirlerin alınması mümkün olabilir. Katılımcıların sağlık kaygılarının hafif düzeyde olduğu tespit edilmiştir. Sağlık okuryazarlığı ve sağlık kaygısı bulguları, COVID-19 pandemisi sürecinde sağlık okuryazarlığının sağlık kaygısını artırıcı veya azaltıcı bir etkide bulunmadığını göstermektedir.

Anahtar Kelimeler: Sağlık Okuryazarlığı, Sağlık Kaygısı, COVID-19 Pandemisi

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I. Introduction

COVID-19 is an infectious disease caused by the SARS-CoV-2 virus. The disease, which emerged in Wuhan, China, at the end of 2019, spread worldwide quickly, and millions of new cases and deaths began to be reported quickly (Banerjee, 2020). The infectious disease has caused tremendous fear and confusion and affected people's lives worldwide in a short time. This is why it is important to underline the terms health literacy and health anxiety, which are vital to individuals' health perceptions and daily lives.

Health literacy is a knowledge-based acquisition that includes literacy skills and makes them competent in matters related to their health. It is defined as the social and cognitive abilities that specify the skills and motivations of individuals to access, comprehend and utilize relevant health data to procure and maintain a healthy state (Nutbeam, 2008). Health anxiety is defined as feeling concerned by the individual's health, fearing that he will have a serious health problem by reading his physical findings incorrectly or exaggeratedly, interpreting the health information obtained in a more pessimistic way than it is, and feeling the possibility of catching the diseases in question (Salkovskis, 1996).

It is known that favourable acquisitions such as health literacy, exercising, and adopting a healthy diet have desirable effects on anxiety and depression (Tran et al., 2020). During the COVID-19 pandemic, people tend to act irrationally compared to before. Health anxiety has a great potential effect on people's lives, preventive measures against the pandemic they take and their health decisions. In this study, it is thought that a relationship between health literacy and health anxiety affects people's health decisions and health behaviours. Especially during the COVID-19 pandemic, shedding light on these notions is more important than at other times.

1.1. Health Literacy

Several definitions have been made for health literacy; in addition, it is known that the term was first used in 1974 in Simonds' study titled "Health Education As Social Policy" (Çopurlar & Kartal, 2015). Health literacy is the capability to carry out basic numerical and reading tasks and read and understand prescriptions, appointment papers, medicine bottles, and other basic health-related materials necessary to function in the healthcare environment (AMA, 1999). Description of health literacy in the Dictionary of Health Promotion; it represents the mental and social abilities that determine the capability and will power of the person to access, comprehend, interpret plus use the knowledge they need to improve their health and maintain their good health. For this reason, health literacy means more than being able to make a hospital appointment or read informative brochures. Health literacy is not limited to a narrow field. However, it is seen as a broad field that requires the individual to define his health, to know his illness, to make appropriate decisions about his health, to know how to benefit from the health system and how to use it properly (WHO, 1998).

Zarcadoolas et al. (2005) suggest that a health-literate person can effectively use the information and notions related to health and practice his health information in new situations. Health literacy develops throughout a person's life and is influenced by demographic, sociopolitical, psychosocial and cultural factors. Therefore, the achievements of health literacy affect all life activities such as work, home, culture and society. Health literacy empowers individuals to appropriately use advanced cognitive and social abilities in changing health-related situations (Speros, 2005).

1.2. COVID-19 and Health Literacy

While social and economic costs are the most significant consequences of the COVID-19 pandemic, there are some challenges related to information overload and an infodemic (Zarocostas, 2020). This crisis causes the generating and distribution of many accurate and inaccurate information and, eventually, the phenomenon of information obesity. Information obesity is the catalyst for several unfavourable events in the general population, and this phenomenon poses major problems for governments, especially if the amount of invalid information is huge (Ashrafi-rizi & Kazempour, 2020).

Incorrect information, distorted information and disinformation caused by the infodemic create confusion. During the coronavirus pandemic, negative information bias (leading to catastrophic health notion) and positive information bias (leading to an illusion of surreal optimism) are cited among the many problems and risks posed by the infodemic (Baines & Elliott, 2020; Luengo-Oroz et. al., 2020). The application of critical health literacy has never been needed more than today, when faced with an infectious disease crisis, information obesity, and high expectations for health control. Public health experts often state that knowing the risk factors of infectious diseases is always key to controlling and preventing the devastating consequences of an infectious disease (Abel & McQueen, 2020). Health literacy is acquired starting from the early stages of life and is seen as a very important means for the prevention of non-communicable diseases with education and communication investments for long-term measures (Nutbeam, 2017).

The world is bombarded with conflicting and complex information about COVID-19 regarding disease detection, diagnosis, prevention and management. In the current pandemic crisis, many individuals face challenging problems in accessing reliable information. The generation and dissemination of misinformation on social media pose a greater risk as it occurs more rapidly than other media channels. WHO is leading the efforts to slow down the spread of the infodemic and offers platforms (Coronavirus disease advice for the public: mythbusters) that aim to contend with misinformation about the global epidemic, with the motto that "we are fighting not only the epidemic but also the infodemic" (Abdel-Latif, 2020; Zarocostas, 2020). As a similar application in the Republic of Turkiye, the Ministry of Health provides informative service on the subject with the "COVID-19 Information Platform". Brochures, publications, vaccination and case numbers related to COVID-19 can be accessed on the web page, and citizens are provided with accurate and clear information.

1.3. Health Anxiety

Health anxiety is described as the state of fear that a person already possesses a significant health problem or will have a health problem due to misreading his physical symptoms. In other words, individuals cannot overcome this sensation due to a threat to their health (Abramowitz & Braddock, 2008). Health anxiety affects many people in different phases of life. It is a common reaction to unexpected situations, emerging physical symptoms, an illness, medical examination, or media coverage of a particular illness. Health anxiety is usually not permanent, and when the triggering factors disappear, the level of anxiety decreases spontaneously or can be controlled through appropriate medical support (Deale, 2007).

Health anxiety arises when bodily changes or situations are interpreted by individuals as if they are a serious illness and is defined as an experience that includes concern and intense interest in health (Asmundson et al., 2010; Reiser et al., 2014; Rachman, 2012). It is known that certain elements are essential in the emergence of health anxiety. These factors consist of the personality and mental characteristics of the individual, the capability to get used to circumstances, and the ability to endure emotional or physical distress (Shahidi et al., 2012). There are two main reasons at the root of health anxiety: the belief in illness and the phobia of illness (Fergus & Valentiner, 2010). Illness belief is a frequently and intensely felt conviction that people already have or will soon have a disease. Illness phobia consists of the idea of the personal costs of having the disease, the potential negative effects of the disease on longevity, and the conviction and thoughts that the disease will inevitably result in death (Brady & Lohr, 2014).

1.4. COVID-19 and Health Anxiety

The high-level concern created by the onset and spread of the pandemic has led to high-level health anxiety. Due to anxiety, individuals can easily fall under the influence of rumours, adopt undesirable lifestyles, and make dietary changes. All of these attitudes affect the mental health of individuals negatively. Therefore, coping with psychological problems during the pandemic is vital (Roy et al., 2020). Studies conducted in previous epidemics and pandemics (Ebola 2014/2016, H1N1 2009/2010, avian flu 2006, SARS 2003) report that health anxiety, health-related agitation and security-seeking

behaviours are widely observed in society at such times (Jalloh et al., 2018; Lau et al., 2010; Main et al., 2011; Saadatian-Elahi et al., 2010).

It is suggested that COVID-19 may even have an impact on health that is not related to COVID-19 when it is needed to receive health care during the COVID-19 period but not seeking health care due to anxiety and fear of infection and the emergence of various complications or even death (Metzler et al., 2020). Patients are thought to avoid waiting rooms and emergency rooms, where they might come into close contact with other patients and healthcare professionals (Feral-Pierssens, 2020). But unmet health needs are associated with a greater risk of complications and worse health outcomes (Heisler et al., 2010). Health concerns about the pandemic have important psychological effects such as stress, avoidance, and unintentional negative thoughts (Gaygısız et al., 2012; Peng et al., 2010). Additionally, health authorities are less interested in addressing emotional distress, anxiety, and other psychological factors likely to affect the spread of infection (Taylor, 2019; Saadatian-Elahi et al., 2010). Jalloh et al. (2018) underline the importance and feasibility of monitoring and addressing the community's mental health in epidemics that threaten public health as a response instrument before and during the pandemic.

II. Research Methodology

2.1. Aim and Scope of the Study

With the Covid-19 pandemic, many new health terms have entered the lives of citizens, such as an epidemic, pandemic, intubated patient, test, positive-negative, quarantine, isolation, infection, PCR, SARS-CoV-2, coronavirus, mRNA vaccines and so forth. Many programs and publications on prevention methods and the pandemic were prepared and shared with citizens. Ministries of Health made official press statements to prevent individuals from being harmed by the pandemic. Researchs and statements were made in the domestic and foreign medical world to counteract the pandemic in the best way possible. Did the increasing amount of content related to the subject in visual and written media, the internet, and social media channels increase the health literacy level of individuals? Did the frequent notifications about COVID-19, the deaths caused by the disease and the sharing of the number of new cases, the high contagiousness of the disease, the strict quarantine rules, and the fact that they were largely removed from social life before the pandemic increased the levels of health anxiety? Based on all these issues, the problem sentence of the research is "Is there a relationship between the health literacy levels of individuals and their health anxiety during the pandemic period, and if so, in which direction is the relationship between health literacy and health anxiety?". The study aims to investigate whether there is a relationship between health literacy and health anxiety and whether health literacy affects health anxiety.

2.2. Population and Sample

The population of the study consists of all individuals over 18 living in the city centre of Isparta. According to the results of the address-based population registration system dated 31 December 2021, there are 332,088 citizens living in Isparta (TUIK, 2022). In the population with 500 thousand individuals in the acceptable minimum sample size table for different populations, the required sample size at a 95% confidence level is 384 (Gürbüz & Şahin, 2018). In the study, 401 individuals were reached, and convenience sampling was used.

2.3. Data Collection Tool

The first part of the questionnaire form is "Demographic Information", the second part is "Health Literacy Scale-32" adapted from HLS-EU scale to Turkish by Okyay and Abacıgil (2016), and the third part is "Health Anxiety Scale" adapted into Turkish by Aydemir et al. (2013). The TSOY-32 was developed as a quartet Likert scale consisting of 32 items and has subscales of “treatment and service” and “disease prevention and health promotion”. Each item is graded 4 as 1 = Very easy, 2 = Easy, 3 = Difficult, 4 = Very difficult. The Health Anxiety Scale is a self-report scale consisting of 18 items. The first 14 items of the scale consist of statements containing quartet answers questioning the mental states of the participants and are named the "hypersensitivity to physical symptoms and anxiety". The

following four questions ask the participants to speculate on their mental state based on the assumption of a serious illness and called "the mental state under the assumption of a serious illness subdimension". The scale is scored in the 0-3 for each item. The higher the score, the higher the individual's health anxiety.

2.4. Method of Analysis

The data obtained through Google Forms and survey forms were analyzed via SPSS 22.0.

First, the health literacy levels of the participants were calculated. In evaluating the TSOY-32 scale, the index scores are standardized to be between 0 and 50. The following formula is used for the calculation of health literacy index scores;

Index = (mean -1)*(50/3)

In this formula, the index corresponds to the health literacy level of individuals, and the mean corresponds to the mean of each item answered by a person. After this calculation, 0 indicates the lowest health literacy, and 50 indicates the highest health literacy level.

As in the TSOY-32 study, the index is classified into four categories;

- (0-25) index score: Inadequate health literacy
- (>25-33) index score: Problematic-limited health literacy
- (>33-42) index score: Adequate health literacy
- (>42-50) index score: Excellent level of health literacy

Index score calculation of components was made for cases where at least 80% of the related questions were answered (Okyay & Abacigil, 2016).

2.5. Psychometric Features of Subdimensions of TSOY-32 and Health Anxiety Inventories

Skewness and kurtosis results of subdimension of TSOY-32; treatment/health services, prevention of diseases/health promotion; and subdimensions of health anxiety scale; hypersensitivity to physical symptoms and anxiety, mental state under the assumption of a serious illness were found to be between -1 and +1, indicating that the distribution was normal (Leech et al., 2005, s. 28). Three subdimensions; "treatment and service", "disease prevention and health promotion" and "hypersensitivity to physical symptoms and anxiety" have good reliability levels over 80% according to findings. The subdimension of the health anxiety scale, "the mental state under the assumption of a serious illness," has an acceptable level of reliability.

2.6. Ethical Statement

With the decision of the Ethics Committee of T.R. Suleyman Demirel University, dated 27.01.2021 and numbered E-87432956-050.99-1 1422, the compliance of the research with ethical principles was approved.

III. Analysis

3.1. Findings Regarding the Descriptive Statistics of the Participants

In table 1, descriptive statistics of participants; which consist of age, gender, marital status, educational status, having chronic illnes/disability, living with family and occupation variables; is shown.

Table 1. Descriptive Statistics of Participants

Demographic Variable	Variable Levels	*f*	%
Age	18-29	101	25.2
	30-39	105	26.2
	40-49	136	33.9
	50+	59	14.7
Gender	Female	262	65.3
	Male	139	34.7
Marital Status	Single	121	30.2
	Married	280	69.8
Educational Status	High School and Below	92	22.9
	Associate Degree	49	12.2
	Bachelor's Degree	179	44.6
	Postgraduate	81	20.2
Do you have a chronic illness or disability?	Yes	78	19.5
	No	323	80.5
Do you live with your family?	Yes	335	83.5
	No	66	16.5
Occupation	Civil Servant	174	43.4
	Private Sector	117	29.2
	Others Occupations	110	27.4

Table 2 shows the comparison results of the treatment and service subdimension by demographic variables. As stated (Table 2), no statistically significant difference was found in comparing treatment and service subdimension by demographic variables ($p > 0.05$).

Table 2. Comparison of the Treatment and Service by Demographic Variables

Variables	*N*	*X*	*SS*	Test Value
Gender				
Female	262	3.09	0.501	$t = -0.677$
Male	139	3.15	0.461	$p = 0.499$
Marital Status				
Single	121	3.14	0.468	$t = 0.540$
Married	280	3.09	0.497	$p = 0.590$
Age				
18-29	101	3.162	0.457	$F(3.397) = 0.473$; $p = 0.702$
30-39	105	3.136	0.516	
40-49	136	3.053	0.506	
50 and above	59	3.114	0.440	
Do You Have a Chronic Illness or Disability?				
Yes	78	3.09	0.485	$t = -0.077$
No	323	3.11	0.489	$p = 0.939$
Do You Live With Your Family?				
Yes	335	3.10	0.497	$t = -0.983$
No	66	3.15	0.439	$p = 0.326$
Education Level				
High School and Below	92	3.176	0.507	$F(3.397) = 1.499$; $p = 0.214$
Associate Degree	49	3.145	0.468	
Bachelor's Degree	179	3.103	0.479	
Postgraduate	81	3.037	0.496	
Occupation				
Civil Servant	174	3.101	0.489	$F(2.398) = 1.763$; $p = 0.173$
Private Sector	117	3.054	0.493	
Other Occupations	110	3.189	0.475	

Table 3 shows the comparison results of the disease prevention and health promotion subdimension by demographic variables. A statistically significant difference was found and interpreted below table.

Table 3. Comparison of the Disease Prevention and Health Promotion by Demographic Variables

Variables	*N*	*X*	*SS*	Test Values
Gender				
Female	262	2.87	0.574	t = -1.371
Male	139	2.97	0.545	p = 0.171
Marital Status				
Single	121	2.94	0.583	t = 0.471
Married	280	2.89	0.558	p = 0.638
Do You Have a Chronic Illness or Disability?				
Yes	78	2.95	0.554	t = 0.938
No	323	2.89	0.568	p = 0.349
Do You Live With Your Family?				
Yes	335	2.89	0.571	t = -0.563
No	66	2.99	0.530	p = 0.574
Age				
18-29	101	2.982	0.619	
30-39	105	2.964	0.526	$F(3.397) = 2.361$; p = 0.071
40-49	136	2.792	0.546	
50 ve Üzeri	59	2.952	0.553	
Education Level				
High School and Below	92	3.034	0.547	
Associate Degree	49	2.854	0.555	$F(3.397) = 1.210$; p = 0.306
Bachelor's Degree	179	2.869	0.562	
Postgraduate	81	2.886	0.588	
Occupation				
Civil Servant	174	2.831	0.591	
Private Sector	117	2.743	0.544	$F(2.398) = 3.131$; p = 0.045
Other Occupations	110	2.935	0.591	

As a result of the comparison of the mean scores of the participants in the context of disease prevention and health promotion by occupational groups (Table 3), a significant difference was found (p = 0.045). LSD test was applied to determine the source of the difference. Test for multiple comparisons found that the mean value of other occupations score was significantly higher than scores of the private sector and civil servant groups. Students of the health management department, which are in the "other occupations" group, are knowledgeable about health literacy, and this can be shown as the reason for this significant difference.

Table 4 shows the comparison results of the TSOY-32 index scores by demographic variables. As a result of comparing the mean scores of the index regarding demographic variables, no statistically significant difference was found (p > 0.05).

Table 4. Comparison of the TSOY-32 Index Scores by Demographic Variables

Variables	*N*	*X*	*SS*	Test Values
Gender				
Female	262	31.775	8.979	t = -1.134
Male	139	32.821	8.420	p = 0.258
Marital Status				
Single	121	32.515	8.851	t = 0.564
Married	280	31.974	8.778	p = 0.573
Do You Have a Chronic Illness or Disability?				
Yes	78	32.568	8.733	t = 0.482
No	323	32.033	8.817	p = 0.630
Do You Live With Your Family?				
Yes	335	31.971	8.870	t = -0.853
No	66	32.982	8.405	p = 0.394

Table 4. Contiuned

Variables	*N*	*X*	*SS*	Test Values
		Age		
18-29	101	32.988	8.807	
30-39	105	32.780	9.241	$F(3.397) = 1.423$; $p = 0.236$
40-49	136	30.898	8.611	
50 and Above	59	32.394	8.249	
		Education Level		
High School and Below	92	33.756	8.924	
Associate Degree	49	32.011	8.769	$F(3.397) = 1.416$; $p = 0.237$
Bachelor's Degree	179	31.702	8.698	
Postgraduate	81	31.337	8.797	
		Occupation		
Civil Servant	174	31.983	9.002	
Private Sector	117	30.884	8.440	$F(2.398) = 3.015$; $p = 0.051$
Other Occupations	110	33.714	8.664	

Table 5 shows the comparison results of the hypersensitivity to physical symptoms and anxiety by demographic variables. Multiple differences were found and interpreted below table 5.

Table 5. Comparison of the Hypersensitivity to Physical Symptoms and Anxiety by Demographic Variables

Variables	*N*	*X*	*SS*	Test Values
		Gender		
Female	262	1.01	0.50	$t = 1.395$
Male	139	0.94	0.42	$p = 0.164$
		Marital Status		
Single	121	0.096	0.452	$t = 0.766$
Married	280	1.00	0.485	$p = 0.444$
		Do You Have a Chronic Illness or Disability?		
Yes	78	1.090	0.460	$t = 2.130$
No	323	0.96	0.476	$p = 0.034$
		Do You Live With Your Family?		
Yes	335	0.980	0.466	$t = -0.747$
No	66	1.028	0.523	$p = 0.456$
		Age		
18-29	101	1.059	0.557	
30-39	105	1.07	0.490	$F(3.397) = 4.789$; $p = 0.003$
40-49	136	0.87	0.399	
50 and Above	59	0.98	0.409	
		Education Level		
High School and Below	92	0.978	0.489	
Associate Degree	49	0.957	0.380	$F(3.397) = 1.005$; $p = 0.390$
Bachelor's Degree	179	1.029	0.489	
Postgraduate	81	0.925	0.480	
		Occupation		
Civil Servant	174	0.986	0.500	
Private Sector	117	0.948	0.459	$F(2.398) = 0.880$; $p = 0.416$
Other Occupations	110	1.032	0.452	

As a result of the comparison of the mean scores of the participants in the context of hypersensitivity to physical symptoms and anxiety by chronic illness/disability (Table 5), a significant difference was found ($p = 0.034$). The mean scores of individuals with chronic illness or disability were higher than those without. Individuals with chronic illness or disability are already at a disadvantage compared to healthy individuals, and they pay more attention to themselves, their health and self-care. Individuals with chronic illness/disability, who are among the group considered as the disadvantaged group during the pandemic period, have increased their anxiety and reaction even to minor changes in their physical symptoms.

As a result of the comparison of the mean scores of the participants of hypersensitivity to physical symptoms and anxiety by age groups (Table 5), a significant difference was found (p = 0.003). LSD test was applied to determine the source of the difference. Test for multiple comparisons found that the mean scores of the 18-29 age group were significantly higher than those of the 40-49 age group. Similarly, the mean scores of the 30-39 age group were significantly higher than those of the 40-49 age group. Individuals in the 18-29 and 30-39 age groups spend more time on visual, written and social media than those in the 40-49 age group. It can be commented that the longer exposure to the news produced on these types of channels or having a more active life compared to the 40-49 age group, the more frequent use of public areas or public transportation vehicles during the pandemic caused higher hypersensitivity to physical symptoms and mean anxiety scores.

Table 6 shows the comparison results of the mental state under the assumption of a serious illness by demographic variables. Multiple differences were found and interpreted below table 6.

Table 6. Comparison of The Mental State Under the Assumption of a Serious Illness by Demographic Variables

Variables	*N*	*X*	*SS*	Test Values
Gender				
Female	262	0.838	0.572	t = -2.072
Male	139	0.969	0.651	p = 0.039
Marital Status				
Single	121	0.948	0.649	t = 1.404
Married	280	0.856	0.581	p = 0.226
Do You Have a Chronic Illness or Disability?				
Yes	78	0.903	0.604	t = 323
No	323	0.879	0.604	p = 0.747
Do You Live With Your Family?				
Yes	335	0.867	0.610	t = -1.203
No	66	0.969	0.564	p = 0.208
Age				
18-29	101	0.995	0.662	
30-39	105	0.940	0.638	F(3.397) = 4.270; p =
40-49	136	0.739	0.481	0.006
50 and Above	59	0.928	0.638	
Education Level				
High School and Below	92	0.877	0.678	
Associate Degree	49	0.887	0.537	F(3.397) = 0.370; p =
Bachelor's Degree	179	0.912	0.621	0.775
Postgraduate	81	0.827	0.598	
Occupation				
Civil Servant	174	0.954	0.653	
Private Sector	117	0.801	0.523	F(2.398) = 2.363; p =
Other Occupations	110	0.884	0.592	0.095

As a result of the comparison of the mental state under the assumption of a serious illness mean scores of the participants by gender groups (Table 6), a significant difference was found (p = 0.039). During the COVID-19 pandemic, the rates of infected male patients needing intensive care after hospitalization and the mortality rates of men originating from COVID-19 are higher than women. Men, especially if they are the only ones working in the household, are concerned about being seriously ill, unable to fulfil their jobs, and losing their earnings. For these and similar reasons, men feel more anxious about assuming a serious illness during the pandemic.

As a result of the comparison of the mental state under the assumption of a serious illness mean scores of the participants by age groups (Table 6), a significant difference was found (p = 0.006). LSD test was applied to determine the source of the difference. Test for multiple comparisons found that the mean scores of the 18-29 age group were significantly higher than those of the 40-49 age group. Similarly, the mean scores of the 30-39 age group were significantly higher than the 40-49 age group mean scores.

Individuals in the 18-29 and 30-39 age groups spend more time on visual, written and social media than those in the 40-49 age group. Additionally, individuals within the 40-49 age group might be more experienced in the terms of living in epidemic conditions and inferring their bodily sensations related to the current disease.

3.2. Correlation Analysis Between Variables

Table 7 shows the results of correlation analysis of TSOY-32, health anxiety scores and their subdimensions. The significant results were interpreted below the table 7.

Tablo 7. Correlation Analysis of TSOY-32 and Health Anxiety Subdimensions

	1	2	3	4	5
1. TSOY-32 Index Scores	1				
2. Treatment and Service	.923**	1			
3. Disease Prevention and Health Promotion	.943**	.746**	1		
4. Hypersensitivity to Physical Symptoms and Anxiety	.037	-.031	.066	1	
5. The Mental State Dimension Under the Assumption of a Serious Illness	-.008	-.004	.010	.517**	1
6. Health Anxiety Mean Scores	.028	-.012	.057	.967**	.717**

** The correlation coefficient is significant at the 0.01 level.

* The correlation coefficient is significant at the 0.05 level.

According to the results obtained (Table 7), a significant and positive high degree of correlation was found between the treatment and service subdimension and the diseases prevention and health promotion subdimension ($r= 0.75$; $p < 0.001$). Similarly, a significant and positive moderate correlation was found between the subdimensions of health anxiety; the hypersensitivity to physical symptoms and anxiety, the mental state under the assumption of a serious illness ($r = 0.52$; $p < 0.001$). However, no significant correlation was found between health literacy and health anxiety scores ($r= 0.28$; $p = 0.575$). According to these results, it can be commented that as the level of treatment and service health literacy increases, the level of prevention from diseases and health promotion literacy increases as well.

3.3. Analyzing the Effect of Health Literacy on Health Anxiety by Regression Analysis

Tables 8,9 and 10 show the regression analysis results of health literacy and health anxiety. In these analyses, health literacy was considered as an predictor, considering it to be a determinant of health anxiety.

Table 8. The Effect of Health Literacy Index Score on the Health Anxiety

Independent Variable	Dependent Variable	*R*	R^2	*F*	*β*	*p*
Health Literacy Index Scores	Health Anxiety	0.038	0.001	0.575	0.038	0.449

According to the regression analysis results (Table 8), it was concluded that health literacy was not a significant predictor of health anxiety ($\beta = 0.038$; $p = 0.449$).

Table 9. The Effect of Health Literacy Score on the Hypersensitivity to Physical Symptoms and Anxiety

Independent Variable	Dependent Variable	*R*	R^2	*F*	*β*	*p*
Health Literacy Index Scores	Hypersensitivity to Physical Symptoms and Anxiety	0.037	0.001	0.545	0.037	0.461

According to the regression analysis results (Table 9), it was concluded that health literacy was not a significant predictor of hypersensitivity to physical symptoms and anxiety ($\beta = 0.037$; $p = 0.461$).

Table 10. The Effect of Health Literacy Score on the Mental State Under the Assumption of a Serious Illness

Independent Variable	Dependent Variable	*R*	R^2	*F*	*β*	*p*
TSOY-32 Index Scores	Mental State Under the Assumption of Serious Illness	0.008	0.000	0.25	-0.008	0.874

According to the regression analysis results (Tables 8,9,10), it was concluded that health literacy was not a significant predictor of the mental state under the assumption of a serious illness ($\beta = -0.008$; $p = 0.874$).

IV. Conclusion/Discussion and Recommendations

The health literacy index scores, which were formed due to the answers given by the individuals who participated in the research, were found problematic-limited. It is seen that the participants were at the level of "limited health literacy" in many studies where the same scale is used as a result of the literature review (Berberoğlu et al., 2018; Bakan & Yıldız, 2019; Değerli & Tüfekçi, 2018). In current studies using the TSOY-32 scale, health literacy index scores indicate that their study samples have adequate health literacy (Uskun et al., 2021; Okur et al., 2021). Today, technologies such as smart devices and the internet are rapidly becoming widespread; individuals can access health applications, sports and diet applications, and reliable health resources more easily through their smart devices. Additionally, due to the widespread use of channels such as 181 and SABIM, it has become easier for citizens to access health services and participate in the health system.

In addition, during the pandemic, citizens' learning and adopting medical terms which they have not frequently heard before but useful in practice such as bacteria, virus, infection, zoonotic infection, comorbidity, antiviral, host, vector, DNA, RNA, mutation, variant, epidemic, pandemic, increases level of healt literacy.

Deniz et al. (2020) investigated the health literacy levels of teachers working in schools affiliated with the Malatya Provincial Directorate of National Education. It was concluded that approximately half of the participants had insufficient or problematic health literacy levels. In the studies of Değerli and Tüfekçi (2018), in which they used the TSOY-32 scale, 401 people were reached from the general public. The health literacy of the participants was determined as problematic-limited health literacy. The study carried out by the Ministry of Health General Directorate of Health Promotion in 2018 aimed to measure the health literacy level of Turkey, and 6228 people were reached. Data were collected using the TSOY-32 scale on a sample representing the whole of Turkey. According to the study findings, it was concluded that 30.9% of the sample had poor health literacy, 38% had problematic-limited, 23.4% had sufficient, and 7.7% had an excellent level of health literacy (Ministry of Health of the Republic of Turkiye, 2018).

In this study, the absence of a statistically significant difference between gender groups in health literacy scores is similar to the results of the studies of Akalın et al. (2021), Gün et al. (2021), Uskun et al. (2021), Değerli and Nezihe (2018) measuring health literacy. On the other hand, studies reveal that health literacy differs by gender (Deniz, 2020; Yılmaz Güven et al., 2018). The fact that health literacy, which contains literacy skills in its essence, does not differ by the gender variable can be attributed to the fact that the literacy rates of women and men are close to each other in developed and developing countries and the abundance of official and unofficial information channels that increase health knowledge of individuals.

The health anxiety score of the study participants are found mild. It is seen that this finding differs from the findings of the other studies conducted during the pandemic. In the study Birimoğlu et al. conducted (2020), it was aimed to examine the effects of COVID-19 on the health anxiety of nursing school students. As a result, the health anxiety levels of nursing students were found to be high. The study conducted by Toraman & Karaçam (2021) found that participants' health anxiety levels were moderate. Similarly, in the study conducted by Güner and Akyol (2021), the findings were rated as high in health anxiety.

In this study, it was observed that there was a significant and positive high degree of correlation between the treatment/service and the disease prevention/health promotion subdimensions. These findings can be interpreted that when the level of health literacy about treatment and health care increases, the level of health literacy for prevention from diseases and about health promotion also increases in the same direction. Similarly, a significant and positive moderate correlation was observed between the hypersensitivity to physical symptoms/anxiety and the mental state under the assumption of a serious illness subdimensions. The findings can be interpreted as hypersensitivity to physical symptoms and health-related anxiety increases; the level of health anxiety under the assumption of serious illness also increases in the same direction.

As a result of the regression analyses performed, it was seen that the treatment and service, the disease prevention and health promotion subdimension, and health literacy index scores were not significant determinants of health anxiety. The result is an appropriate answer to the research question, "Is there a relationship between the health literacy levels of individuals and their health anxiety levels during the pandemic period, and if so, in which direction is the relationship between health literacy and health anxiety?".

The suggestions from the study's results can be listed as follows. The higher the health literacy, which includes the ability to be literate in its core, the higher the competencies of individuals in terms of public health and their health. From this point of view, the effectiveness and efficiency of the studies carried out to increase the literacy level in our country can be emphasized. Restrictions and sanctions may be imposed on visual and written publications related to health that directly or indirectly harm society through the publication of unfounded treatment and prevention methods, especially during a pandemic. Negative emotions caused by health anxiety can create a heavy burden on individuals. Units like the U.S. Department of Health and Human Services Substance Abuse and Mental Health Services Administration Suicide Prevention Resource Center can be established in every country. The mental and physical benefits of exercising have been proven for a long time. For citizens to have regular and effective sports habits, state-supported gyms can be opened nationwide. Thus, it can contribute to a more resilient society against diseases and mental problems. For future studies, researchers may be advised to choose a wider population or country-wide application area.

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References

Abdel-Latif, M. M. M. (2020). The enigma of health literacy and COVID-19 pandemic. *Public Health*, *185*, 95-96.

Abel, T., & McQueen, D. (2020). Critical health literacy and the COVID-19 crisis. *Health Promotion International*, *35*, 1612–1613.

Abramowitz, J. S., & Braddock, A. E. (2008). *Psychological treatment of health anxiety and hypochondriasis*. Gottinggen: Hongfere Publishing.

Akalın, B., Yalman, F., Baydili, K., Modanoğlu, A., & Sancar, T. (2021). Genç bireylerin yeni medya okuryazarlığı ile sağlık okuryazarlığı davranışları arasındaki ilişkinin tespit edilmesi. *Sağlık ve Sosyal Refah Araştırmaları Dergisi*, *3*, 136-144.

AMA (American Medical Association). (1999). Ad hoc committee on health literacy. Health Literacy: Report Of The Council On Scientific Affairs. *JAMA*, *281*, 552–557.

Ashrafi-rizi, H., & Kazempour, Z. (2020). Information diet in COVID-19 crisis; a commentary. *Archives of Academic Emergency Medicine*, *8*(1), e30.

Asmundson, G. J. G., Abramowitz, J. S., Richter, A. A., & Whedon, M. (2010). Health anxiety: Current perspectives and future directions. *Current Psychiatry Reports*, *12*, 306–312.

Aydemir, Ö., Kırpınar, I., Satı, T., Uykur, B., & Cengisiz, C. (2013). Sağlık Anksiyetesi Ölçeği'nin Türkçe için güvenilirlik ve geçerlilik çalışması, *Nöropsikiyatri Arşivi Dergisi*, *50*, 325-331.

Baines, D., & Elliott, R. J. R. (2020). *Defining misinformation*. Disinformation and malinformation: An urgent need for clarity during the COVID-19 infodemic. Discussion papers 20. Department of economics, UK: University of Birmingham.

Bakan, A. B., & Yıldız, M. (2019). 21-64 yaş grubundaki bireylerin sağlık okuryazarlık düzeylerinin belirlenmesine ilişkin bir çalışma. *Sağlık ve Toplum*, *29*(3), 33-40.

Banerjee, D. (2020). The COVID-19 outbreak: Crucial role the psychiatrists can play. *Asian Journal of Psychiatry*, *50*, 102014. doi: 10.1016/j.ajp.2020.102014.

Berberoğlu, U., Öztürk, O., İnci, M. B., & Ekerbiçer, H. Ç. (2018). Bir aile sağlığı merkezine kayıtlı 18-65 yaş grubu bireylerdeki sağlık okuryazarlığı durumunun değerlendirilmesi. *Sakarya Tıp Dergisi*, *8*(3), 575-581.

Birimoğlu Okuyan, C., Farasu, F., & Polat, F. (2020). COVID-19'un hemşirelik öğrencilerinin sağlık kaygısı düzeyleri üzerine etkisi. *Van Sağlık Bilimleri Dergisi*, *13*(özel sayı), 45-52.

Brady, R. E., & Lohr, J. M. (2014). A behavioral test of contamination fear in excessive health anxiety. *Journal of Behavior Therapy and Experimental Psychiatry*, *45*(1), 122-127. oi: 10.1016/j.jbtep.2013.09.011.

Çopurlar, C., & Kartal, M. (2015). What is health literacy? How to measure it? Why is it important?. *Turkish Journal of Family Medicine and Primary Care*, *10*(1), 42-47.

Deale, A. (2007). Psychopathology and treatment of severe health anxiety. *Psychiatry*, *6*(6), 240–246.

Değerli, H., & Tüfekçi. N. (2018). Toplumun sağlık okuryazarlık düzeyinin belirlenmesi. *Avrasya Uluslararası Araştırma Dergisi*, *6*(15), 214-228.

Deniz, S., Bentli, R., Kalkanlı, M. T., Fırıncı, B., Yalınız, F., Demir, E., …, & Akbaba, M. (2020). Malatya ilinde çalışan öğretmenlerin sağlık okuryazarlığı düzeylerinin ve ilişkili faktörlerin belirlenmesi. *Sakarya Tıp Dergisi*, *10*(2), 28-36. https://doi.org/10.31832/smj.636313.

Feral-Pierssens, A. L., Claret, P. G., & Chouihed, T. (2020). Collateral damage of the COVID-19 outbreak: Expression of concern. *European Journal of Emergency Medicine*, *27*(4), 233-234. https://doi.org/10.1097/MEJ.0000000000000717.

Fergus, T. A., & Valentiner, D. P. (2010). Disease phobia and disease conviction are separate dimensions underlying hypochondriasis. *Journal of Behavior Therapy and Experimental Psychiatry*, *41*(4), 438–444. doi: 10.1016/j.jbtep.2010.05.002.

Gaygısız, U., Gaygısız, E., Özkan, T., & Lajunen, T. (2012). Individual differences in behavioral reactions to H1N1 during a later stage of the epidemic. *Journal of Infection and Public Health*, *5*(1), 9-2. https://doi.org/10.1016/j.jiph.2011.09.008.

Gün, M., Aslantekin, F., & Karadağ, N. (2021). Evaluating the health literacy of medical and vocational school of health services students and affecting factors. *Turkish Journal of Bioethics*, *8*(1), 34-43.

Güner, Akyol, T. (2022). Relationship between health anxiety and compliance preventive behaviours with health literacy in the COVID-19 process. *Manisa Celal Bayar University Journal of Institute of Health Science*, *9*(1), 23-31.

Gürbüz, S., & Şahin, F. (2018). *Sosyal bilimlerde araştırma yöntemleri* (5th Edition). Ankara: Seçkin Publishing.

Heisler, M., Choi, H., Choi, H., Rosen, A. B., Vijan, S., Kabeto, M., …, & Piette, J. D. (2010). Hospitalizations and deaths among adults with cardiovascular disease who underuse madications because of cost: A longitudinal analysis. *Journal of Medical Care, 48*(2), 87-94. doi:10.1097/MLR.0b013e3181c12e53.

Jalloh, M. F., Li, W., Bunnell, R. E., Ethier, K. A., O'Leary, A., Hageman, K. M., …, & Redd, J. T. (2018). Impact of Ebola experiences and risk perceptions on mental health in Sierra Leone. *BMJ Global Health*, *3*(2), e000471. https://doi.org/10.1136/bmjgh-2017-000471.

Lau, J. T. F., Griffiths, S., Choi, K. C., & Tsui, G. Y. (2010). Avoidance behaviors and negative psychological responses in the general population in the ınitial stage of the H1N1 pandemic in Hong Kong. *BMC Infectious Diseases*, *10*(139), 1-13. https://doi.org/10.1186/1471-2334-10-139.

Leech, L. N., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for intermediate statistics: Use and interpretation* (2nd Edition). Gottinggen: Lawrence Erlbaum Associate Publishers.

Luengo-Oroz, M., Pham, K. H., Bullock, J., Kirkpatrick, R., Luccioni, A., Rubel, S., …, & Mariano, B. (2020). Artificial intelligence cooperation to support the global response to COVID-19. *Nature Machine Intelligence*, *2*, 295–297. https://doi.org/10.1038/s42256-020-0184-3.

Main, A., Zhou, Q., Ma, Y., Luecken, L. J., & Liu, Z. (2011). Relations of SARS-Related stressors and coping to Chinese college students'psychological adjustment during the 2003 Beijing SARS epidemic. *Journal of Counseling Psychology*, *58*(3), 410-423. https://doi.org/10.1037/a0023632.

Metzler. B., Siostrzonek, P., Binder, R. K., Bauer, A., & Reinstadler, S. J. (2020). Decline of acute coronary syndrome admissions in Austria since the outbreak of COVID-19: The pandemic response causes cardiac collateral damage. *European Heart Journal*, *41*(19), 1852-1853. doi:10.1093/eurheartj/ehaa314.

Republic of Turkiye Ministry of Health. (2018). *Türkiye sağlık okuryazarlığı düzeyi ve ilişkili faktörlerin araştırılması*. Seçil Özkan (Ed). Ankara: Özyurt Matbaacılık.

Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science & Medicine*, *67*(12), 2072-2078. doi: 10.1016/j.socscimed.2008.09.050.

Nutbeam, D., McGill, B., & Premkumar, P. (2017). Improving health literacy in community populations: A review of progress. *Health Promotion International*, *33*(5), 1-11. https://doi.org/10.1093/heapro/dax015.

Okur, E., Evcimen, H., & Yağcı Şentürk, A. (2021). Sağlık hizmetleri meslek yüksekokulu öğrencilerinin sağlık okuryazarlığı düzeylerinin incelenmesi. *Sürekli Tıp Eğitimi Dergisi*, *30*(1), 18-24.

Okyay, P., & Abacıgil, F. (2016). *Türkiye sağlık okuryazarlığı ölçekleri güvenilirlik ve geçerlilik çalışması*. Ankara: T.C. Sağlık Bakanlığı.

Peng, E. Y. C., Lee, M. B., Tsai, S. T., Yang, C. C., Morisky, D. E., Tsai, L. T., …, & Lyu, S. Y. (2010). Population-Based post-crisis psychological distress: An example from the SARS outbreak in Taiwan. *Journal of the Formosan Medical Association*, *109*(7), 524-532.

Rachman, S. (2012). Health anxiety disorders: A cognitive construal. *Behavior Research and Therapy*. *50*(7-8), 502–512. doi: 10.1016/j.brat.2012.05.001.

Reiser, S. J., McMillan, K. A., Wright, K. D., & Asmundson, G. J. G. (2014). Adverse childhood experiences and health anxiety in adulthood. *Child Abuse & Neglect*, *38*(3), 407–413. doi: 10.1016/j.chiabu.2013.08.007.

Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety and perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian Journal of Psychiatry*, *51*, e102083.

Saadatian-Elahi, M., Facy, F., Signore, C. D., & Vanhems, P. (2010). Perception of epidemic's related anxiety in the general French population: A cross-sectional study in the Rhône-Alpes region. *BMC Public Health*, *10*(191), 1-10. https://doi.org/10.1186/1471-2458-10-191.

Salkovskis, P. M. (1996). The cognitive approach to anxiety: Threat beliefs. Safety seeking behavior and the special case of health anxiety and obsessions. In Salkovskis P. M. (Ed.), *Frontiers of Cognitive Therapy*. New York: Guilford Press.

Shahidi, S., Molaie, A., & Dehghani, M. (2012). Relationship between health anxiety and alexithymia in an Iranian sample. *Procedia-Social and Behavioral Sciences*, *46*, 591-595.

Speros, C. (2005). Health literacy: Concept analysis. *Journal of Advanced Nursing*, *50*(6), 633–640.

Taylor, S. (2019). *The psychology of pandemics: Preparing for the next global outbreak of ınfectious disease*. Newcastle UK: Cambridge Scholars Publishing.

Toraman, A., & Karaçam, K. (2021). COVID-19 pandemi sürecinde korku, sağlık kaygısı ve diş sağlığı bilgi düzeyleri arasındaki ilişkinin değerlendirilmesi. *Selcuk Dental Journal*, *9*(3), 738-745.

Tran, T. V., Nguyen, H. C., Pham, L. V., Nguyen, M. G., Nguyen, H. C., Ha, T. H., ..., & Duong T. V. (2020), Impacts and interactions of COVID-19 response ınvolvement, health-related behaviours, health literacy on anxiety, depression and health-related quality of life among healthcare workers: A cross-sectional study. *BMF Open*, 1–13, 10(e041394). doi:10.1136/bmjopen-2020-041394.

TUIK. (2022, May 25). *Adrese dayalı nüfus kayıt sistemi sonuçları, 2021.* https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2021-45500.

Uskun, E., Kisioğlu, A. N., Önal, Ö., & Akçam, Z. (2021). COVID-19 pandemisi "normalleşme" sürecinde hastaların sağlık kurumlarının kullanımı ve sağlık okuryazarlığı ile ilişkisi. *Flora*, *26*(4), 628-638.

WHO, (1998). *Health promotion glossary*. Switzerland: World Health Organization.

Yılmaz Güven, D., Bulut, H., & Öztürk, S. (2018). Sağlık bilimleri fakültesi öğrencilerinin sağlık okuryazarlığı düzeylerinin incelenmesi. *Journal of History Culture and Art Research*, *7*(2), 400-409. doi:http://dx.doi.org/10.7596/taksad.v7i2.1511.

Zarcadoolas, C., Pleasant, A., & Greer, D. S. (2005). Understanding health literacy: An expanded model. *Health Promotion International*, *20*(2), 195-203. doi: 10.1093/heapro/dah609.

Zarocostas, J. (2020). How to fight an infodemic. *The Lancet*, *395*(10225), p676. https://doi.org/10.1016/S0140-6736(20)30461-X.