

Examining the mediating role of e-health literacy in the relationship between COVID-19 awareness and dispositional hope and the experiences of those who survived the disease

Aykut Gunlu 

Department of Child Care and Youth Services, Pamukkale University, Denizli, Turkey

Correspondence

Aykut Gunlu, Department of Child Care and Youth Services, Pamukkale University, Denizli, Turkey.
Email: agunlu@pau.edu.tr

Abstract

The aim of this study was to examine the mediating effect of e-health literacy levels on the relationship between individuals' awareness of COVID-19 and dispositional hope during the COVID-19 pandemic. The research was conducted with a mixed-methods design. Quantitative data were collected for the study online using Google Forms and qualitative data were collected online with an interview technique. In this framework, the qualitative data were obtained from a total of 15 people who had been diagnosed with COVID-19. These participants were selected using the snowball sampling method. A personal information form, e-Health Literacy Scale, Coronavirus Awareness Scale, Dispositional Hope Scale, and semistructured interview form were utilized in the course of the research. As a result of, it was determined that there were significant relationships between coronavirus awareness and both e-health literacy and dispositional hope, as well as between e-health literacy and dispositional hope. The measurement model was found to have good fit values. Testing the structural equation model, it was determined that e-health literacy had a full mediating role between

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coronavirus awareness and dispositional hope. In addition, this study showed that people who had COVID-19 had increased awareness of COVID-19 after contracting the disease.

KEYWORDS

awareness, COVID-19, dispositional hope, e-health literacy, pandemic, quantitative research

1 | INTRODUCTION

When the new coronavirus disease known as COVID-19 emerged in China, scientists could not predict that it would be effective across such a wide area in a very short time. With the speed of human mobility, the virus spread around the world rapidly, essentially becoming unstoppable. Therefore, on March 11, 2020, the World Health Organization (WHO) stated that the new type of coronavirus was no longer a regional epidemic; instead, it was a pandemic. The COVID-19 was subsequently described as the largest disaster of recent years, affecting societies around the world in many ways, as the relevant statistics clearly show. For example, in 2020, while COVID-19 cases in Turkey numbered 2,424,328, the number of deaths was 24,933. At the same time, while the number of cases in the world exceeded 96 million, the number of deaths exceeded 2 million (Republic of Turkey, Ministry of Health, 2020; World Health Organization, 2021).

Since ancient times, outbreaks of disease have affected states negatively in many areas, from agriculture to education and from public health to politics. While outbreaks may cause the effects of some important values to weaken, some other values may rise in importance. For example, the “Spanish flu” influenza pandemic called attention to the value of protecting public health, and the COVID-19 pandemic has shown that the development levels of countries are not always sufficient for predicting public health responses. Being a developed country alone is not enough, but the importance of development in this process can be clearly seen. In Turkey, various aspects of the pandemic response have been criticized, although it is stated that the policy has been successful in general (Turkish Medical Association, 2020). COVID-19 has also highlighted the perception of states focusing on “my own society, my own nation” rather than emphasizing globalism and it has increased the importance of states' struggles for total mobilization and cooperation (Aydınlı, 2020). In many countries, international flights were canceled for a while to keep the pandemic under control with the aim of protecting the health of both citizens and other nations. In Turkey, as in most other countries, citizens returning from abroad were kept under a 14-day quarantine, curfews were implemented, and employers in both the public and private sectors switched to flexible working hours or distance working. While these measures taken by many states were effective in reducing human mobility, they were also seen to increase the rates of certain psychological problems in people (Unutulmaz, 2020).

The increasing cases of COVID-19 and the death rates also played an important role in changing people's behaviors. This new life, as expressed by the Ministry of Health of the Republic of Turkey and those of other countries, may be conceptualized as “the new normal.” It seems to have been difficult for individuals to adapt to this new normal. Difficulties experienced in the adaptation process have also negatively affected individuals' coping skills (González-Sanguino et al., 2020; Li et al., 2020; Lu et al., 2020; Oral & Gunlu, 2020, 2022; Van Bavel et al., 2020). In addition, the delay in the development of an effective vaccine against COVID-19 and misinformation about both vaccines and the disease may have also contributed to making the adaptation to the new normal difficult. Overall, the uncertainty experienced by individuals during the pandemic was often effective in increasing their feelings of hopelessness, fear, unhappiness, and helplessness (Xiao et al., 2020).

The anxiety levels of individuals living in areas with higher rates of COVID-19 infection were found to be higher compared to individuals living in areas with fewer cases of the disease (Çölgeçen, 2020). It was also determined that having had contact with an infected individual despite not being infected oneself and being quarantined and subjected to social isolation had negative impacts on individuals' mental health (Erdoğan et al., 2020). Both uncertainty about the impact of the measures taken to curb the pandemic and the fact that individuals saw the virus steadily narrowing the scope of their day-to-day activities caused life satisfaction to decrease while levels of despair about the future increased (Dugas et al., 1997; Rajkumar, 2020). These findings highlight the importance of individuals being able to access accurate information during difficult times such as pandemics to protect their mental health. Individuals can take conscious precautions against infection or other dangers when they have accurate information.

It is known that individuals use different strategies to cope with problems such as the changes arising from a pandemic. Some individuals have used cognitive coping strategies to obtain information from news sources while watching news about COVID-19, while others used other coping strategies (Asıcı, 2020; Cho et al., 2022). Another approach that individuals have used to cope with the pandemic was collecting information about the pandemic with the help of smartphones. Current data and updated information about the pandemic were instantly delivered to large audiences via smartphone or through social networks such as Instagram and Twitter. A study was conducted examining the Twitter posts of the Minister of Health of the Republic of Turkey, Fahrettin Koca, during the COVID-19 pandemic (Bilgin, 2020). In that study, Minister Koca's Twitter posts before and during the pandemic were compared while considering factors such as the course of the pandemic and the number of cases. In addition, it was observed that the number of followers of the account increased fivefold during the pandemic compared to the number of followers before the pandemic, exceeding 5 million. These findings suggest that people viewed the Minister of Health as a reliable source of information during the pandemic.

In protecting public health, it is important to prevent not only the transmission of a disease but also flows of misinformation (Kickbusch, 2001). One of the important problems that scientific experts struggled with during the early stages of the COVID-19 pandemic was the effects of a related infodemic. "Infodemic" refers to the spread of misinformation or information pollution (Okay & Abacigil, 2016). The first stage of combating an infodemic entails increasing the level of health literacy. Health literacy was first defined by Simonds in 1974, and the World Health Organization (2013) now defines the concept as an individual's ability to access and apply the correct information to maintain his or her basic health. Similarly, Parvanta (2011) defined health literacy as the ability not only to understand information about health or disease, but also to apply complex information, drug prescriptions, and preventive measures related to health or disease. The Turkish Ministry of Health defines e-health as the electronic provision of accurate and effective information about health to people as quickly as possible, taking advantage of technology's benefits in terms of information transfer (Özer et al., 2012). It has been observed that many people use the internet to obtain information about diseases and to find the most reliable health institutions or doctors, thanks to the generally widespread use of the internet in recent years (Birru et al., 2004; Spadaro, 2003). At the same time, various internet platforms offer their users opportunities to produce new content. This situation makes it difficult to control the information available on the internet (Bertot et al., 2012). It has also been stated that individuals who have insufficient health literacy are often unable to decide what information on the internet is accurate and reliable (Skinner et al., 2003). Digital generations, including individuals who use the internet extensively, are often inadequate in terms of accessing and understanding reliable information sources (Coşkun & Bebiş, 2015).

Health literacy is known to have an impact on the prevention and treatment of diseases, especially in terms of the timely and correct use of medications and in keeping track of medical appointments. Relatedly, experts constantly warn that healthcare services should not be unnecessarily busy or utilized unnecessarily, especially during a pandemic (Aslantekin & Yumrutas, 2014; Eicher et al., 2009; Howard et al., 2005; Paakkari & Okan, 2020; Yılmaz & Tiraki, 2016). In a study conducted by Berkman et al. (2011), it was concluded that low health literacy increased the rate of hospital inpatient treatment, caused emergency services to be busier, and created misunderstandings of the messages conveyed about health. Similar results were obtained by Gray et al. (2005), who

determined that individuals had difficulty in using and understanding e-health information. In contrast, individuals with high health literacy were found to be more conscious of false and distorted media information. Such individuals accept the information presented to them only after logical filtering and research. This process of considering information has been described as including the health literacy qualities proposed by Nutbeam, and it may reduce the risk of disease transmission thanks to the increased awareness that it imparts among individuals (Sorensen et al., 2012).

The fact that the COVID-19 pandemic lasted longer than expected increased the importance of complying with the preventive measures implemented by governments to prevent the spread of the pandemic. Compliance with such measures appears to be related to the public's high awareness of the importance of prevention and the presence of a sufficient level of health literacy. In addition to the importance of high levels of awareness within a society, it has also been found that whether an individual is hopeful about the future or not affects his or her level of compliance with preventive measures (Hamermesh, 2020).

Hope is one of the concepts that has been actively utilized in processes intended to ensure the survival of human societies, and it has always served to strengthen well-being and support mental health. While a high level of hope is an indicator of good health and full functioning, a low level of hope is interpreted as an indicator of personal sadness and troubles (Martin, 2007). People with high levels of hope have more life goals and apply more strategies to achieve those goals. In addition, they are more self-confident, lively, energetic, and willing and able to cope with difficulties. When faced with a significant challenge, hopeful individuals focus on pursuing a goal rather than on failure and they make use of adaptive coping strategies (Fitzgerald Miller, 2007). Hope is just as important for sick individuals as it is for healthy individuals. It significantly impacts the life expectancy and quality of life of chronically ill patients and those with life-threatening conditions, especially in terms of successfully coping with the disease. In this regard, studies aimed at evaluating levels of hope have been conducted with both healthy and sick individuals (Stoner, 2004).

In line with the importance of hope, future expectations, happiness with life, the meaning attributed to life, and an individual's feeling of well-being and health are important elements that affect the individual's mental health (Chen et al., 2017). Therefore, individuals with high hope for the future generally display more resilient attitudes towards the difficult life conditions they encounter and are more successful than other individuals in finding solutions to problems by looking at events or circumstances from more positive perspectives (Avşaroğlu & Koç, 2019).

The primary goal during a pandemic is to protect individuals from the infectious disease in question. In other words, the primary goal is to protect the physical health of individuals. It is important to take the necessary precautions for meeting that goal. However, although preventive measures such as orders to stay home or apply social isolation will protect the physical health of an individual, they may negatively affect the individual's mental health. However, it has been observed that the negative effects of such precautions and restrictions do not occur to the same extent among different people (Bilgin, 2020). While some individuals may be extremely negatively impacted and some individuals may be rarely impacted, other individuals seem to experience no negative effects. The fact that preventive measures affect individuals in different ways suggests that there may be mediating variables causing certain individuals to be more negatively affected. It is hoped that the present study will make important contributions to the literature by identifying the mediating variables that affect individuals' mental health.

As the COVID-19 pandemic emerged, it was observed that some scientific experts caused further confusion through the dissemination of large volumes of information because COVID-19 was a new disease and there was limited evidence-based information (Bulut, 2020). In some cases, this led the public to engage in unhelpful practices rather than raising awareness about the disease. It is important for individuals to access accurate and reliable sources of information in a conscious way to understand the severity of a disease and realize the importance of preventive measures. Therefore, another aim of the present study is to achieve a better understanding of the experiences of patients with COVID-19 in the face of possible misinformation or confusion. In doing so, this study addresses an important gap in the literature on individual reactions to the COVID-19 pandemic.

2 | METHOD

2.1 | Research design

This research was undertaken with a sequential explanatory design between November 1 and November 30, 2020. Sequential explanatory designs constitute a mixed-methods approach to research in which qualitative and quantitative research methods are used together. By combining the results obtained from both qualitative and quantitative data, mixed-methods research provides a better understanding of the subject at hand. Sequential explanatory designs are based on the principle of obtaining quantitative data and then investigating the unexpected results from the quantitative data in depth (Creswell, 2013; Johnson & Onwuegbuzie, 2004). The qualitative part of this research took the form of a case study as one of the popular qualitative research designs. Case studies aim to define, explain, and predict relationships among real-life phenomena by revealing the uncertain points in an event or situation (Gay et al., 2009). Case studies represent an important research design as they allow phenomena to be addressed in real-life settings (Yin, 2014). For this reason, the goal of a case study is not to reach large numbers of people but rather to examine a situation in depth (Gilham, 2009).

2.1.1 | Sample

The sample of this study was established using the snowball sampling method, which is one of the criteria-based sampling methods. Google Forms was used in this process. While 145 of the participants were female (48.2%), 156 were male (51.8%). Participants ranged in age between 15 and 40 years, and the mean age was 21.44.

2.1.2 | Process

As this study was conducted with a mixed-methods design, voluntary consent to participate was obtained from the participants for both data collection methods. The purpose of the study was conveyed to the participants and they were informed that they could withdraw from the study whenever they wanted. The qualitative data were obtained through online interviews conducted by the researcher with the participants. Each interview lasted approximately 15–20 min. The quantitative data were obtained online using Google Forms. In both cases, online data collection techniques were preferred to avoid the health risks arising from face-to-face interviews during the pandemic. The qualitative data collection form included eight questions and the responses were evaluated with content analysis. Content analysis is a method with which the relationships between qualitative data are determined according to certain themes, categories, and codes (Yıldırım & Şimşek, 2011). The analysis of the quantitative data was conducted with the IBM SPSS Statistics and AMOS Graphics programs.

2.2 | Scales

Interviews constitute a frequently used qualitative data collection method. To obtain the quantitative data of this study, the e-Health Literacy Scale, Coronavirus (COVID-19) Awareness Scale, and Dispositional Hope Scale were used.

2.2.1 | Personal information form

The personal information form used in this research was created by the researcher and consisted of questions to determine the demographic characteristics (e.g., age and gender) of the participants.

2.2.2 | E-Health Literacy Scale (EHEALS)

Norman and Skinner (2006) developed the e-Health Literacy Scale and it was adapted to Turkish by Tamer Gencer (2017). This scale was developed to measure the knowledge and skills of people in accessing and using e-health information. The eight items of the scale are scored with 5-point Likert-type responses. Higher scores indicate that individuals have higher levels of e-health knowledge and skills. The internal consistency of the scale was found to be 0.86 and the Cronbach α coefficient was 0.92.

2.2.3 | Coronavirus (COVID-19) Awareness Scale

The Coronavirus Awareness Scale was developed by Bilgin (2020). The scale consists of 17 items and three subdimensions: awareness of protective measures against contagion (nine items), awareness of following current developments (four items), and awareness of hygiene measures (four items). The scale is scored with 5-point Likert-type responses that range between 1 ("never") and 5 ("always"). Higher scores for any of the subdimensions indicate that the level of awareness for that subdimension is high. The Cronbach α coefficient of the scale was found to be 0.93 for the first subdimension, 0.87 for the second subdimension, and 0.82 for the third subdimension.

2.2.4 | Dispositional Hope Scale

The Dispositional Hope Scale was developed by Snyder et al. (1991) and adapted to Turkish by Tarhan and Bacanlı (2015). It consists of 12 items and two subdimensions: alternative ways of thinking (four items) and action-oriented thinking (four items) (the remaining four items are fillers). Items are scored with an 8-point Likert-type scale. Higher scores indicate higher levels of hope. The Cronbach alpha coefficient of the scale was found to be 0.86.

2.3 | Data analysis

Before analyzing the quantitative data, responses involving missing data were removed from the data set. Items in the scales that would be reverse-scored were then prepared for scoring. After determining that the responses to the scales were normally distributed, the total and subdimension scores of the scales were calculated and data analysis was performed. All analyses were conducted with IBM SPSS Statistics 22 and the AMOS Graphics program.

The qualitative data obtained in this study were evaluated using the content analysis method. Content analysis entails deciphering the data to create themes, codes, or categories and then interpreting them (Yıldırım & Şimşek, 2011). The content analysis began with the transcription of the interviews. After the transcriptions of all interviews were completed, themes and codes were identified and the analyses were completed.

2.4 | Ethical standards in quantitative and qualitative research

Before the research was started, permission was obtained from the Ministry of Health (Number: 2020-12-20T02_43_07). Before collecting data from the participants, the subject and purpose of the study were clearly explained and assurance was given that the information obtained would only be used within the scope of the academic study. Additionally, participants were assigned numbered codes (e.g., "1M" would signify the first participant and denote that individual's gender as male) to ensure that their identities would remain confidential during the data analysis, which is especially important when obtaining qualitative data (Miles & Huberman, 2016).

2.5 | Reliability and credibility of the study

In qualitative research, the concepts of reliability and credibility are emphasized more than the concepts of internal and external validity (Yıldırım & Şimşek, 2011). To ensure the credibility of the present study, the questions administered to the participants were selected with inspiration from previous studies on the pandemic in the literature, with the aim of allowing data to be collected on all dimensions of the subject. One method used to ensure the external validity of a study is the evaluation of its similarity to the findings of previous studies (Shenton, 2004). With that aim, the results of previous studies and the results of the current research were compared in detail, as presented in the discussion section.

To increase the reliability of a study, expert evaluations may also be sought. This method is also referred to as rater consistency (Creswell, 2013; Miles & Huberman, 2016). For this purpose, the transcriptions of the interviews were sent to two experts working in the field, and their opinions were requested. Common themes and codes were created by comparing the content analysis performed by the researcher with the opinions provided by these experts. In addition, studies must be reported objectively to ensure the internal reliability of the research (Connelly, 2016). Thus, the data obtained in the present study were first transcribed and then themes, categories, and codes were created using the content analysis method. Finally, an attempt was made to ensure the credibility of the themes and codes by giving examples from the participants' statements.

3 | RESULTS

Relationships between the variables explored in this study were analyzed with the Pearson correlation test. These relationships were evaluated using the mean, standard deviation, skewness, kurtosis, and Cronbach α values of the variables. Accordingly, the relationships between the variables are shown in Table 1.

Considering the descriptive statistics provided in Table 1, the variables explored in this study show normal distribution. When the correlation values are examined, it is seen that there are significant relationships between the subdimensions within the scales and between the subdimensions of one scale and the subdimensions of other scales. Positive significant relationships were found between contagion precaution awareness and awareness of following current developments ($r = 0.40$, $p < 0.01$), hygiene precaution awareness ($r = 0.49$, $p < 0.01$), e-health literacy parcel-1 ($r = 0.17$, $p < 0.05$), e-health literacy parcel-2 ($r = 0.14$, $p < 0.05$), alternative ways of thinking ($r = 0.12$, $p < 0.05$), and action-oriented thinking ($r = 0.13$, $p < 0.05$). Similarly, positive significant relationships were found between awareness of following current developments and e-health literacy parcel-1, e-health literacy parcel-2, alternative ways of thinking, and action-oriented thinking. Positive significant relationships were found between hygiene precaution awareness and e-health literacy parcel-1, e-health literacy parcel-2, alternative ways of thinking, and action-oriented thinking. Furthermore, the analysis revealed significant positive relationships between e-health literacy parcel-1 and e-health literacy parcel-2, alternative ways of thinking, and action-oriented thinking. Positive significant relationships were found between e-health literacy parcel-2 and alternative ways of thinking and action-oriented thinking. Finally, a positive significant relationship was found between alternative ways of thinking and action-oriented thinking. The respective Cronbach α reliability coefficients ($\alpha = 0.74$, $\alpha = 0.76$, $\alpha = 0.77$, $\alpha = 0.87$, and $\alpha = 0.92$) of the scales and their subdimensions were found to be sufficient (Büyükoztürk, 2010).

3.1 | Measurement model and testing of the model findings

Considering the analysis results in Table 1, it was determined that the observed variables were significantly related to each other. Fit indices frequently used in the testing of measurement models are χ^2 , χ^2/df , root mean square

TABLE 1 Correlation values and descriptive statistics for the relationships between variables.

	1	2	3	4	5	6	7
1. Awareness of contagion precautions	1	0.40**	0.49**	0.12*	0.14*	0.12*	0.13*
2. Awareness of following current developments		1	0.41**	0.17**	0.14*	0.13*	0.13*
3. Awareness of hygiene precautions			1	0.16**	0.13*	0.14*	0.11*
4. e-Health literacy, parcel 1				1	0.75**	0.25**	0.19**
5. e-Health literacy, parcel 2					1	0.28**	0.22**
6. Alternative ways of thinking						1	0.81**
7. Action-oriented thinking							1
Mean	40.01	15.74	15.02	14.21	14.77	24.97	24.10
Standard deviation	5.07	4.3	3.67	4.11	3.76	4.97	5.03
Skewness	-1.83	-0.91	-0.90	-0.46	-0.44	-0.67	-0.52
Kurtosis	1.79	-0.09	0.59	-0.31	-0.42	0.21	-0.23
Cronbach α	0.85	0.87	0.77	0.92	0.87	0.74	0.76

Note: N = 301.

** $p < 0.01$; * $p < 0.05$.

error of approximation (RMSEA), standardized root mean square residual (SRMR), goodness of fit index (GFI), normed fit index (NFI), comparative fit index (CFI), and adjusted goodness of fit index (AGFI) (Bayram, 2016; Brown, 2006). Accordingly, before the analysis of the structural equation model, the measurement model showing the relationships between observed variables and latent variables was tested and the resulting values are presented in Table 2 and Figure 1. It was seen that the fit values of the measurement model were satisfactory ($\chi^2/df = 1.68$, $p < 0.001$, RMSEA = 0.05, SRMR = 0.02, GFI = 0.98, CFI = 0.99, AGFI = 0.97). The obtained factor loads ranged between 0.37 and 1.00, indicating that the observed variables significantly represent the latent variables.

3.2 | Structural equation model for the mediating role of e-health literacy in the relationship between coronavirus awareness and dispositional hope

Baron and Kenny (1986) stated that to test a mediating variable with structural equation modeling, there should be a significant relationship among the dependent (in this case, dispositional hope), independent (coronavirus awareness), and mediating (e-health literacy) variables. Table 1 confirms that there are significant relationships among the variables considered in this study. Thus, the results obtained are suitable for the analysis of the model (Şimşek, 2007).

According to the structural equation model analysis performed for the mediating effect of e-health literacy, the measurement model has good fit indices ($\chi^2/df = 1.68$, $p < 0.001$, RMSEA = 0.05, SRMR = 0.02, GFI = 0.98, CFI = 0.99, AGFI = 0.97). The structural model obtained from the analysis is presented in Figures 2 and 3. According to the results of the analysis, coronavirus awareness positively predicted e-health literacy ($\beta = 0.26$, $p < 0.01$), and e-health literacy positively predicted hope ($\beta = 0.29$, $p < 0.01$). With the inclusion of e-health literacy as a mediating variable in the model, the power of coronavirus awareness to predict dispositional hope decreased ($\beta = 0.06$, $p < 0.05$). When it was included in the analysis as the control variable, gender did not have a significant effect on the mediating and dependent variables (Figure 2). Overall, coronavirus awareness significantly predicted dispositional hope with the mediating effect of e-health literacy ($\beta = 0.06$, $p < 0.05$).

TABLE 2 Fit indices of the measurement model.

Measurement	Good fit values	Value obtained	Comment
χ^2/df	≤ 3	1.68	Good fit
RMSEA	≤ 0.05	0.05	Good fit
SRMR	≤ 0.05	0.02	Good fit
GFI	≥ 0.90	0.99	Good fit
CFI	≥ 0.97	0.99	Good fit
AGFI	≥ 0.90	0.97	Good fit

Note: $N = 301$.

Abbreviations: CFI, comparative fit index; GFI, goodness of fit index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual.

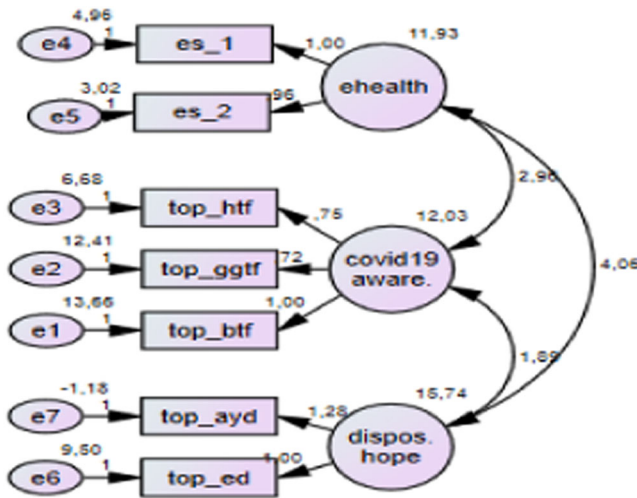


FIGURE 1 Analysis results for the measurement model (es_1: e-health literacy parcel-1; es_2: e-health literacy parcel-2; top_htf: awareness of hygiene measures; top_ggtf: awareness of following current developments; top_btf: contamination precaution awareness; top_ayd: thinking of alternative paths; top_ed: action-oriented thinking).

3.3 | Bootstrapping process

The significance of the direct and indirect effects of the variables in the model was examined with bootstrapping analysis with 1000 repeated samplings, as recommended in the literature (Arbuckle, 2007). Accordingly, all direct path coefficients were found to be significant (Table 3). The indirect path coefficient, which enables the understanding of the intermediary role, is also significant ($\beta = 0.06$, $p < 0.05$, CI = 0.01, 0.14).

3.4 | Awareness of people with coronavirus disease

When the qualitative data of the study were evaluated, the themes of thoughts, emotions, behaviors, healthcare, attitudes, habits, and staying at home were identified. The obtained themes and codes are presented in Table 4.

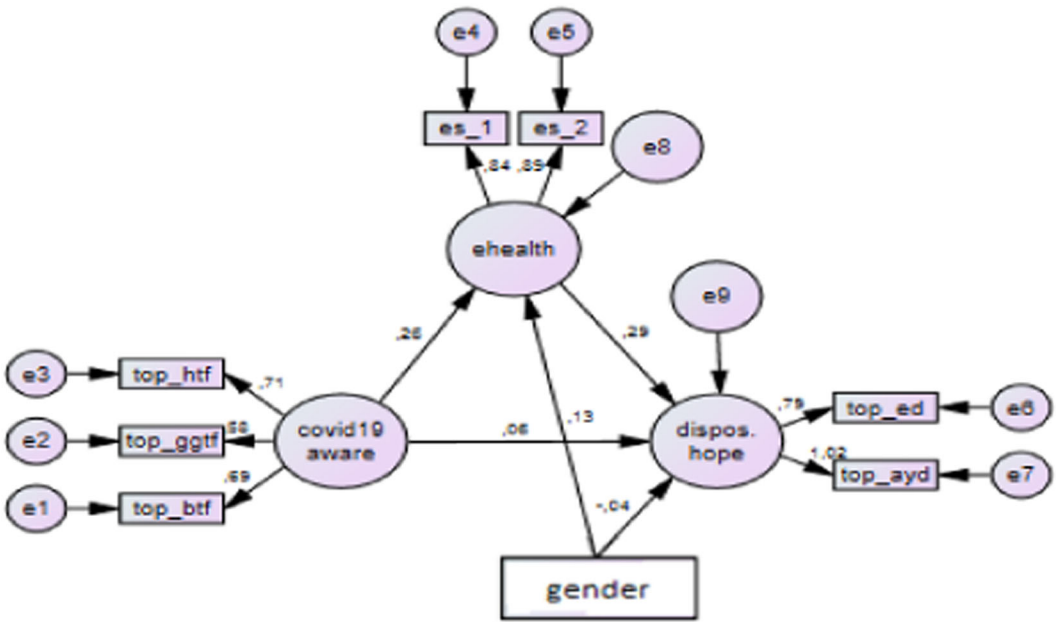


FIGURE 2 Testing the mediating role of e-health literacy in the relationship between coronavirus awareness and dispositional hope. covid19 aware, coronavirus awareness; health, e-health literacy; dispos. hope, dispositional hope.

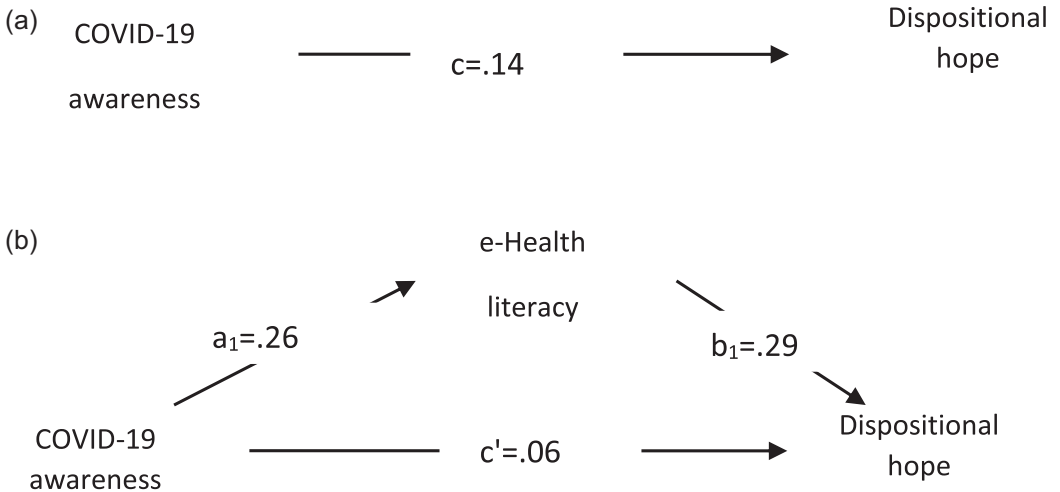


FIGURE 3 Indirect effects of e-health literacy in the relationship between coronavirus awareness and dispositional hope (a, b).

The theme of “thoughts” included thoughts such as underestimating the disease or not believing in COVID-19 before participants became ill, while their thoughts changed during and after the illness and they came to believe in COVID-19 and understand its severity. For example, Participant 3F stated the following: “I didn’t care much, I perceived it as a disease like the flu, but when I got the disease, I saw that it was a very serious disease.” Similarly, Participant 5M explained: “I thought there was no such disease. Thinking that they exaggerated the symptoms of

TABLE 3 Results of bootstrapping analysis examining the direct and indirect effects of the structural equation model.

Model pathways	Coefficient	95% CI	
		Lower	Upper
Direct effect			
COVID-19 awareness → e-Health literacy	0.26**	0.05	0.46
e-Health literacy → Dispositional hope	0.29**	0.04	0.49
COVID-19 awareness → Dispositional hope	0.14**	0.01	0.33
Indirect effect			
COVID-19 aware.→e-Health literacy→Dispositional hope	0.06	0.01	0.14

Abbreviation: CI, confidence interval.

**According to these results, it can be said that e-health literacy has a full mediating role between coronavirus awareness and dispositional hope.

the disease, I didn't expect it to be so painful even if I did catch it." These examples highlight the differences in participants' thoughts before and after contracting COVID-19.

The theme of "Emotions" reflected some participants' experiences with anxiety and fear of contagion before contracting COVID-19. It was observed that they experienced anxiety about death during the course of the illness, together with sadness about being isolated from their loved ones and fear of harming their loved ones. After the illness, happiness was experienced as their health improved, and the anxiety and fear of death decreased. For example, Participant 1F stated: "I was afraid before the illness, but I was more afraid of the possibility of harm to my baby because I was pregnant when I got the disease, but my fear decreased after I recovered." Participant 2M explained: "I had an intubated inpatient treatment at the hospital, I had anxiety about separation from my loved ones and death. My anxiety disappeared after I recovered from the illness."

Topics such as masking, social distancing, and hygiene were included within the theme of "behaviors." While masks and social distancing were used by the participants less often before their illness, a significant increase in awareness about observing masking and social distancing policies both during and after the illness could be observed. While don't pay much attention was paid to hygiene before the illness, increased attention to hygiene was observed both during and after the illness. Reflecting this awareness of masks, social distance, and hygiene, Participant 2M, a barber, stated the following: "The barber performs his job while standing very close to the customer. Therefore, before the illness, I was standing close to the customers and I could not obey the mask and distance rules very much. When customers weren't wearing one, I didn't feel the need to tell them to do so, either. However, after I recovered, I started using double masks while doing my work. I also warn those who try to enter the workplace without wearing a mask."

Within the context of the theme of "healthcare," it was determined that many participants did not want to use healthcare services because they were concerned about receiving an official diagnosis of COVID-19. The pregnant woman among the participants was particularly worried about being infected at the hospital. Participant 3F stated: "I would be quarantined if my test were positive when I went to the hospital, and the neighbors would see the healthcare teams that would come to my home, and they would avoid me," reflecting the fact that the participants did not want to utilize the services of healthcare institutions.

Within the context of the theme of "attitude," other individuals in the participants' families were generally not very sensitive to the pandemic before the participant's illness, but after a member of the family became ill, their attitudes changed and they were more careful and attentive to the pandemic, following the relevant precautions more carefully. Participants stated that everyone in the family paid more attention to social distancing and hygiene and warned each other about these issues after the participants contracted COVID-19. For example, Participant 4F stated the following: "My mother was also living with us when we were sick. The three of us were constantly

TABLE 4 Themes arising regarding the awareness of people with COVID-19.

Theme	Awareness	
	Before illness	After illness
Thoughts	Thinking	Understand the seriousness
Emotions	Take it lightly, don't believe Contagion anxiety	Anxiety about death Sadness about separation from loved ones
Behaviors	Fear Masking Social distance Hygiene	Fear due to pregnancy Using a mask even indoors Keeping a distance, even in the home Increased attention rate
Healthcare	Fear due to pregnancy Pay little attention Don't care much Don't pay much attention, like everyone else	Fear decreased with recovery Don't wear a double mask Pay special attention Pay much more attention
Attitude	—	—
Habits	Hospital Stigma	Not wanting healthcare exposure because of pregnancy Stigmatization
Staying at home	Family attitude Protection Eating habits Coping strategies Social contacts	Everyone checking on each other Pay more attention to cleanliness and social distance Pay more attention Fully virtual communication No
Isolation	Pay attention to cleanliness Normal Establishing face-to-face communication Yes, sometimes	Maximal protection Importance of a healthy diet Preferring virtual communication Absolutely not
	Constraints	Health comes first, before freedom
	Pay attention	Being unable to leave the house and feeling under pressure
		Health is more important than freedom Enjoyment of freedom

checking on each other during the quarantine. We were taking each other's temperatures and checking our sense of smell and taste."

Within the theme of "habits," participants described their approach to pandemic-related protective measures as normal before they became ill themselves. While they paid attention to cleanliness and social distancing, they described their eating habits as being normal and they still relied heavily on face-to-face communication as a coping strategy. In contrast, during the illness, more attention was paid to cleanliness, protective measures, and nutrition, and face-to-face social communication was abandoned. After the participants recovered, their habits remained deeply affected and they paid more attention to preventive strategies. For example, Participant 5M stated: "We are still cleaning the door handles and the places we touch. I wear double masks when I go out. I was paying attention to my cleanliness and hygiene before, and I still continue in the same way."

In the context of the final theme, "staying at home," participants had thought that there was no need for such restrictions before they contracted COVID-19. During and after the illness, they felt that they better understood the value of freedom, but they also stated that freedom was less important than health. For example, Participant 3F explained: "I have understood that life is very simple, that health is very valuable, and that precautions should be taken so that life does not flow out of our hands and we don't depart from our loved ones."

4 | DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

The present study was undertaken with two main objectives. One aim was to examine the mediating effect of e-health literacy on the relationship between individuals' awareness of COVID-19 and their level of dispositional hope during the COVID-19 pandemic. The second aim was to evaluate the awareness of people who contract COVID-19 regarding their experiences with the disease. The findings discussed below are based on both quantitative and qualitative data.

Analysis of the data obtained in this study revealed that e-health literacy plays a full mediating role in the relationship between coronavirus awareness and dispositional hope. In other words, it was seen that the relationship disappears when e-health literacy is introduced into the relationship between coronavirus awareness and dispositional hope. In a study conducted by Karataş (2020), it was determined that individuals' concerns about the future increased during the COVID-19 pandemic and that increased uncertainties about the future caused a decrease in individuals' levels of hope. It was also previously determined that individuals with lower levels of hope have more difficulty in setting goals and solving the problems they encounter (Green et al., 2006). In another study, a significant difference was observed between participants' levels of hope in April 2020 and August 2020, attributed to the fact that as the quarantine period increased, the uncertainty regarding the pandemic continued (Cihanyurdu et al., 2021).

Another important finding of the present study is that the awareness of individuals increased significantly after they contracted COVID-19. Precautionary warnings intended to prevent the transmission of the disease received more attention after the participants had recovered from COVID-19. Relatedly, previous studies have shown that public access to correct information during a pandemic is just as important as protective measures to prevent the spread of the disease (Chen et al., 2020; Modi et al., 2020; Qazi et al., 2020; Wadood et al., 2020). Access to correct information not only preserves individuals' feelings of hope but also increases their awareness of the disease. For the public to be informed correctly and quickly, the Turkish Ministry of Health took action promptly in January 2020, before COVID-19 was identified in the country, by establishing the Coronavirus Scientific Advisory Board and a special phone hotline for questions and concerns related to COVID-19 (Turan & Çelikyay, 2020). A study conducted in the early stages of the pandemic determined that the public generally tried to obtain information about COVID-19 from social media platforms. That allowed the public to access information easily and quickly, but the reliability of the information was found to vary according to the news sources or social networks used by any given individual. The same study concluded that a large portion of the Turkish public saw the social media accounts

of Minister of Health Fahrettin Koca as reliable sources of information (Çerçi et al., 2020). It is also emphasized in the literature that public access to reliable sources of information in the event of disasters such as pandemics is very important in ensuring that the public take the necessary measures and that appropriate implementations be applied (Longstaff & Yang, 2008; Tirkkonen & Luoma-aho, 2011; Zhou et al., 2020). Other studies in the literature reveal that a healthy flow of correct information tends to ensure that people perceive risks more accurately and follow the necessary measures more carefully to avoid those risks (De Hoog et al., 2007; Ruiter et al., 2001). Furthermore, it has been demonstrated that high levels of e-health literacy can prevent the unnecessary use of healthcare resources, especially during pandemics (Goto et al., 2019).

In the present study, significant changes were identified in participants' perspectives before and after contracting COVID-19. It was observed that the participants did not care about the disease before they became ill and they did not take precautions or protective measures to prevent the transmission of the disease. While negative feelings increased among the participants as a result of their illness, their awareness of the precautions and protective measures to be taken against the disease also increased. The participants experienced intense fears and anxieties regarding the stigma surrounding COVID-19, hospitalization, compulsory quarantine, and the possibility of harm to the baby during pregnancy. In addition, it was seen that the participants experienced anxiety about transmitting the disease to those around them while they were ill. In the literature, it is emphasized that people who test positive for COVID-19 are exposed to stigma and discrimination (Cyrus et al., 2020; Enli Tunçay et al., 2020). Such studies have concluded that individuals' efforts to cope with that stigma are as important for them as their efforts to adapt to the pandemic itself.

One way to deal with health-related stigma is to increase e-health literacy and ensure that people receive accurate information (Ramaci et al., 2020). In the studies conducted by Moghanibashi-Mansourieh (2020) it was determined that people with COVID-19 were fearful of transmitting the disease to their relatives. In a study conducted in China by Yang and Ma (2020), it was observed that the well-being of individuals decreased by 74% and their unhappiness increased during the pandemic. Other studies in the literature similarly determined that individuals' levels of fear and anxiety increased during this period (e.g., Bo et al., 2021). In another study conducted in China, it was found that having relatives infected with COVID-19 increased the anxiety of individuals. In contrast, among front-line healthcare workers, anxiety and stress increased at the beginning of the pandemic but decreased over time as these individuals adapted to dealing with negative situations related to the pandemic (Sun et al., 2020). Özdin and Bayrak Özdin (2020) reported that general anxiety and health-related anxiety were higher among women and people with chronic illnesses in Turkish society and that such situations caused individuals to have lower levels of hope for the future.

In this study, significant differences were determined in terms of participants' responses to warnings issued by scientists before and after the participants contracted COVID-19. There was an increase in positive behaviors such as paying more attention to cleanliness, adopting the habit of wearing masks, and practicing the rules of social distancing while talking to people face-to-face or while shopping. In the study conducted by Karataş (2020), an increase of 85%–90% was observed in the cleaning, mask-wearing, and hygiene behaviors of individuals after they contracted COVID-19.

The present study revealed that individuals preferred to rely on virtual communication rather than face-to-face conversations to cope with the negative effects of COVID-19. In studies in the literature, it has been observed that people use various strategies to cope with the negativities of pandemics, as well as with negative societal attitudes such as stigma and discrimination (Oran & Şenuzun, 2008; Wang et al., 2020). It is emphasized that information systems must be strong, especially in the initial fight against a pandemic, and active coping strategies should be taught (Çaykuş & Çaykuş, 2020). The first of these coping strategies should entail increasing the level of awareness and e-health literacy levels of all members of society (Polizzi et al., 2020). In addition, periods of time during which staying at home is required are often problematic, because individuals feel deprived of their freedom. For this reason, ensuring that people understand the importance of complying with preventive measures, even those that feel difficult, is important in curbing and preventing pandemics. Implementing more awareness-based training

sessions on the correct and effective use of technology in the field of health may be particularly effective in protecting society and public health.

This study is important in terms of revealing the levels of e-health literacy among individuals during a pandemic. However, the study has some limitations. First, the qualitative data were obtained from a limited sample. Furthermore, the obtained data are limited to reflecting the specific characteristics measured by the e-Health Literacy Scale, Coronavirus Awareness Scale, and Dispositional Hope Scale. In future studies, researchers could explore other variables that may also affect awareness during a pandemic. By designing various training programs aimed at increasing e-health literacy, the effectiveness of e-health literacy can be evaluated in more detail.

CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the author, without undue reservation.

ORCID

Aykut Gunlu  <http://orcid.org/0000-0002-6617-2871>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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