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Examine the Relationship between Health Literacy Level and Over-the-Counter (Otc) Product Consumption During the Period of the Global Pandemic Caused by Covid-19



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Abstract

This study contributes to the literature by examining the relationship between individuals' health literacy levels and their consumption of over-the-counter products. The sample of the study consisted of 416 individuals aged 18 years and over, who were reached through Google Forms and patients and their relatives who were hospitalized in the emergency and units of Prof. Dr. Süleyman Yalçın City Hospital in Istanbul. The data were analyzed using confirmatory factor analysis and structural equation models were used statistically.

The study revealed a positive correlation between health literacy and customer satisfaction. In addition, fear of COVID-19 was found to have a positive effect on customer satisfaction. Another factor found to have a positive effect on customer satisfaction was perceived economic value. Perceived economic risk was found to have a significant negative effect on perceived economic value. Fear of COVID-19 was found to have a positive effect on perceived risk. As a result, it was concluded that studies to increase the health literacy of individuals are necessary to increase customer satisfaction in the consumption of health products.

Keywords

Over-the-counter Medicines · OTC · Health Literacy · COVID-19 · Customer Satisfaction

Author Note

This study was prepared by Dr. Muhammed Esat Çetin under the supervision of Prof. Dr. Veysel Bozkurt based on his doctoral dissertation titled written in 2022 "The Effect of the Health Literacy Level of Individuals on the Consumption of Health Products in the Covid-19 Process".

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Examine the Relationship between Health Literacy Level and Over-the-Counter (Otc) Product Consumption During the Period of the Global Pandemic Caused by Covid-19

The consumption of health products in the health expenditures of individuals has a significant role in numerous areas of healthy life, including treatment, protection, nutrition and exercise in daily life. In particular, the concept of self-medication has led to a rise in individual health expenditures in recent times. Individuals purchase over-the-counter (OTC) products, particularly from pharmacies, because of their own experiences, recommendations or internet research (Çetin, 2022).

The rise in health expenditure may reduce the allocation of funds for basic living expenses. Conversely, an excessive increase in health expenditure may have a detrimental effect on the standard of living. Factors such as the lack of health insurance or difficulties in accessing health services can contribute to individuals resorting to self-medication. From another perspective, self-medication refers to the purchase of medicines directly from pharmacies for the treatment of simple illnesses that do not require an appointment to be examined or that do not require a hospital visit (Ogasawara et al., 2000). The phenomenon of self-medication is becoming increasingly prevalent across the globe (Baracaldo-Santamaría et al., 2022). Consequently, the OTC drug market is expanding in terms of both the number of products available and the number of consumers purchasing them. Research is being conducted to assess the advantages and risks associated with self-medication (Ogasawara et al., 2000). In light of the aforementioned considerations, research on the concept of self-medication is becoming increasingly important (Baracaldo-Santamaría et al., 2022).

For individuals to have easy, effective and efficient access to health services, it is necessary to increase their health knowledge, improve their understanding and evaluation capacities on health issues and, in other words, to enhance their health literacy (Sørensen et al., 2012). In recent times, states and international organizations have sought to facilitate individuals' access to health services, increase their use of health services, and utilize the facilities and capabilities of health systems more effectively and efficiently in accordance with the concept of health literacy. In this context, the definition of health literacy proposed by the World Health Organization is of particular significance: "Health literacy is linked to literacy and refers to the knowledge, motivation and competence of people to access, understand, evaluate and apply health information to make judgments and decisions in daily life to maintain or improve quality of life throughout their lives through health services, disease prevention and health promotion." (Nutbeam & Kickbusch, 1998). As the definition indicates, the objective of enhancing health literacy encompasses not only the provision of information but also the promotion of an active attitude change.

The consumption and saving behaviors of individuals are influenced by extraordinary processes. The impact of the COVID-19 pandemic on the demand for health products is also noteworthy. In consumer behavior, the shift toward online purchasing has been a notable change (Sheth, 2020). The analysis of the reasons for the relationship between individuals' consumption of health products in extraordinary periods and crises, and the comparison of the effects of this relationship in different groups, production planning and market processes of health products, which play a vital role in the provision of health services, is of great importance for individuals to access these products in a healthy way (Zwanka & Buff, 2021). The objective of this study was to investigate the influence of an individual's health literacy level on their consumption of health products during the COVID-19 pandemic.

The health products analyzed in this study are limited to OTC health products whose consumption is increasing. In the study, the consumption behaviors of consumers were also examined with regard to their economic dimensions. In this sense, the statements of the perceived value and perceived risk scales were adapted to evaluate the economic dimensions of consumers' perceived risk and value. In addition, the purchase intention and consumer satisfaction scales were also adapted from the ready-made scales. The fear experienced by individuals during the COVID-19 pandemic was evaluated using the COVID-19 Fear Scale. Additionally, the Health Literacy Scale was employed to assess health literacy.

Method

Research Sample

One of the reasons for working on the sample is to overcome the cost difficulties of working on the universe of the research, as well as the time and space difficulties. In scientific studies, it is aimed to work on sufficiently large samples representing the universe. The aim is to collect valid and reliable data rather than collecting a lot of data (Karasar, 2012). The sample size table provided by Tutar and Erdem (2020) in their literature on sample size in quantitative research indicates that a sample size of 384 is required for a population size of more than 100,000 people at a 95% confidence interval (Tutar & Erdem, 2020).

While collecting data both face-to-face and via google-form, volunteers participating in the survey were selected in both survey groups, and all individuals over the age of 18 who consumed over-the-counter health products were included in the study. During the Covid-19 outbreak, which continued during the period when the data were collected, due to the fear of individuals from the outbreak, the researcher took the necessary precautions and collected data face-to-face in the hospital. Data were also collected via google-form so that participants could answer the questionnaire more easily under pandemic conditions.

Table 1

Socio-demographic characteristics of the sample

		Frequency	Percentage
Age	18-25 Years	100	24,04
	26-33 Years	111	26,68
	34-41 Years	87	20,91
	42-49 Years	57	13,70
	50 Years and Older	59	14,18
	Missed	2	0,50
	Total	416	100,00
Marital Status	Single	172	41,3
	Married	227	54,6
	Divorced/Widowed	17	4,1
	Missed	0	0,0
	Total	416	100,00
Gender	Woman	199	47,8
	Male	215	51,7
	Total	416	100,00
Education Status	Primary and Below	19	4,6

		Frequency	Percentage
	Secondary Education	79	19,0
	University	240	57,7
	Master's Degree and Above	76	18,3
	Missed	2	0,5
	Total	416	100,00
Profession	Own business	35	8,4
	Public Sector	121	29,1
	Private Sector	107	25,7
	Housewife	35	8,4
	Student	57	13,7
	Unemployed	19	4,6
	Others	42	10,1
	Missed	0	0
	Total	416	100,00
Income Status	Less than 1500 TL*	84	20,20
	1501-3000 TL	57	13,70
	3001-5500 TL	116	27,90
	5501-8000 TL	94	22,60
	Over 8001 TL	60	14,40
	Missed	5	1,20
	Total	416	100,00

*TL: the Turkish Lira

A total of 240 patients and their relatives who applied to the emergency department of Prof. Dr. Süleyman Yalçın City Hospital and were admitted to the hospital wards were surveyed face to face. In addition, 230 people received a questionnaire via the Google-form, and 217 questionnaires were answered. Of the total 457 questionnaires, 41 were excluded from the analysis because the participants did not answer most of the questions or marked inappropriately. A total of 416 questionnaires were used in the application. The socio-demographic data of the participants are presented in [Table 1](#).

Data Collection Tool

To determine the variables and to determine the most appropriate scales for use in the study, a comprehensive review of the relevant literature was conducted, and the scales that could be employed were evaluated. The suitability of the scale expressions for use in our study and the opinions of experts were considered in the selection of the scales. The statements of the original scales translated into Turkish and used in different studies were compared, and the statements were adapted to our study. The results of these studies created a questionnaire, which was organized around the scales. The 5-point Likert expressions of the Purchase Intention, Customer Satisfaction, Perceived Risk and Perceived Value and COVID-19 Fear scales are organized as follows: 1-strongly disagree, 2-strongly disagree and 3-undecided. The 5-point Likert expressions of the Health Literacy Scale are as follows: 1-very difficult, 2-difficult, 3-undecided, 4-easy, 5-very easy. The questionnaire is composed of three sections. In the initial section, respondents are informed about the questionnaire and the concept of OTC medications is elucidated in detail. They were then asked

to indicate which OTC medications they believed were effective in determining their decision to purchase OTC health products. The second section of the questionnaire comprises the scales. This study comprises 40 statements, which are divided into six distinct sections. The first section encompasses the Perceived Value, Customer Satisfaction, Perceived Risk, Purchase Intention, Health Literacy and COVID-19 Fear scales. The second section comprises a series of questions about the demographic data of the respondents, including whether they have had the disease, their vaccination status and their level of trust in pharmaceutical companies. The third and final section comprises a series of questions about the respondents' experiences of the disease and their views on the efficacy of vaccines.

The scale statements provided in the questionnaire were developed following the pilot study, with the sole inclusion of economic dimensions. In the measurement of health literacy, the TSOY-32 scale, developed by Okyay & Abacıgil (2016), comprises two dimensions: "Treatment and Service" and "Disease Prevention/Health Promotion". In the present study, the 16-statement "Disease Prevention/Health Promotion" dimension of the scale was employed to examine the impact of this process on the consumption of health products and the protection of individuals from the SARS-CoV-2 virus, particularly during the ongoing pandemic. (Okyay & Abacıgil, 2016). To measure the fear of COVID-19, two different scales were employed: the scale created by Ahorsu et al (2020) and the scale created by Bakioğlu et al (2021). (Ahorsu et al., 2020; Bakioğlu et al., 2021). To ascertain the perceived value of the subject matter, the studies of Lee et al (2012) and Yeşilyurt (2018) were consulted, with the five statements in our study being adapted accordingly (Lee et al., 2012; Yeşilyurt, 2018). The four statements used to measure patient satisfaction were adapted from Oliver (1980), Sütütemiz (2005) and Yeşilyurt (2018).

Data Analysis

In this study, IBM SPSS Statistics 21 and AMOS 24 software were used to analyze the data collected through the questionnaire. This involved the application of confirmatory factor analysis (CFA) followed by the use of structural equation models. CFA was used to validate the scales used in our study and to test the fit of the data. Considering the effectiveness and advantages of structural equation models in examining situations that cannot be measured directly, such as perceptions, attitudes and behaviors, structural equation modeling was used in our study.

Findings

Validity and Reliability

In the scale development and utilization process, CFA was performed separately for the scales to be used. The goodness of fit values of each scale were found to be above the acceptable limits in the CFA (Table 2). The covariances between the error terms are shown in the structural equation model table. Furthermore, following the removal of each item from the analysis due to inappropriate factor loadings, the analysis was repeated and the factor loadings were re-examined (Table 4).

Table 2

Confirmatory Factor Analysis Values

	P değeri	CMIN/DF	GFI	AGFI	NFI	CFI	RMSEA	Hoelter.05
Customer Satisfaction	0,026	3,636	0,992	0,959	0,994	0,996	0,08	342
Health Literacy	0	3,761	0,946	0,904	0,955	0,966	0,082	161
COVID-19 Fear Scale	0	4,904	0,97	0,907	0,975	0,98	0,097	160

	P değeri	CMIN/DF	GFI	AGFI	NFI	CFI	RMSEA	Hoelter.05
Perceived Risk	0,043	2,725	0,992	0,961	0,992	0,995	0,064	397
Perceived Value	0,004	4,494	0,987	0,937	0,99	0,992	0,092	241

Cronbach's alpha is the most commonly used coefficient to reflect reliability because it considers reliability consistently and across all statements. Additionally, Cronbach's alpha reflects the correlation between the questions. In our study, Cronbach's Alpha values of the scales were calculated. A Cronbach's Alpha value approaching 1 indicates the reliability of the statements. In general, a Cronbach's Alpha value of 0.80 or higher is set as a highly reliable value.

In a model, the combined reliability value (CR) and the average variance explained (AVE) provide crucial data for the construct validity of the model. A CFA model is expected to meet the conditions of $AVE > 0.5$, $CR > 0.7$, and $CR > AVE$ for its validity and reliability (Karaman, 2023; Yaşlıoğlu, 2017). Upon analysis of the Cronbach's Alpha, AVE (Average Variance Extracted) and CR values, the data demonstrate robust validity and reliability (Table 3).

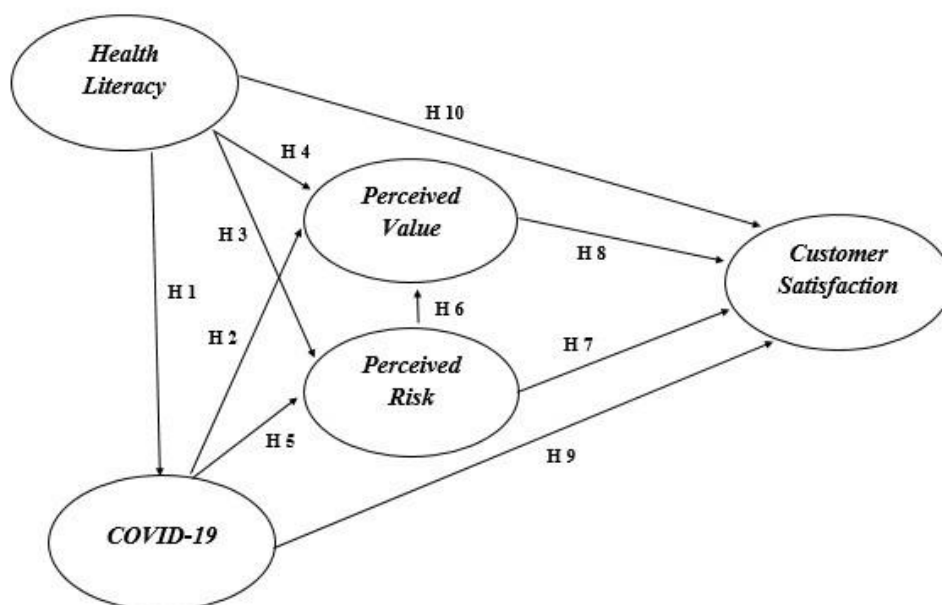
Table 3

Cronbach's Alpha, CR and AVE values

	Cronbach's Alpha (α)	CR	AVE
Perceived Value	0,887	0,875	0,588
Perceived Risk	0,867	0,853	0,542
Health Literacy	0,92	0,908	0,501
COVID-19 Fear Scale	0,894	0,88	0,518
Customer Satisfaction	0,921	0,92	0,741

Testing the Model with Structural Equation Modeling

In the process of testing the structural model of our model, the hypotheses are indicated with arrows. The statistically significant ones were evaluated with their p-values, goodness of fit values, standardized regression coefficients, and the statistically insignificant ones were removed from the model. The theoretical model of the model established to be examined with structural equation modeling is given below.

Figure 1*Hypothesis diagram of the Theoretical Model*

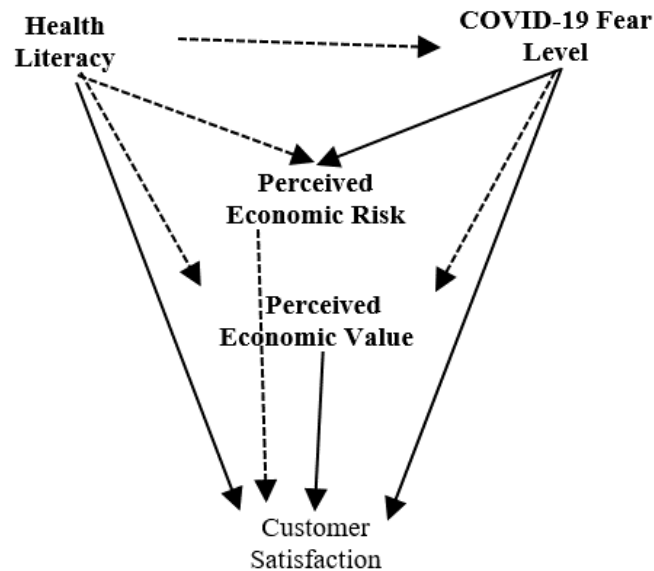
H1: Health literacy negatively affects fear of COVID-19, H2: Fear of COVID-19 positively affects perceived value, H3: Health literacy positively affects perceived risk, H4: Health literacy positively affects perceived value, H5: Fear of COVID-19 positively affects perceived risk, H6: Perceived value negatively affects perceived risk, H7: Perceived risk negatively affects customer satisfaction, H8: Perceived value positively affects customer satisfaction, H9: Fear of COVID-19 positively affects customer satisfaction, H10: Health literacy positively affects customer satisfaction (Figure 1).

Hypothesis Results

Hypothesis H1 assumed that health literacy has a statistically negative effect on the fear of COVID-19. The standardized regression coefficient obtained in the structural equation model was -0.036 , the p value was 0.488 , and the hypothesis was rejected at the 0.05 significance level. Accordingly, there was no significant effect of health literacy on the level of fear of COVID-19. The H2 hypothesis assumed that the fear of COVID-19 has a statistically positive effect on the perceived value. The standardized regression coefficient obtained in the structural equation model was -0.015 , the p value was 0.769 , and the hypothesis was rejected at the 0.05 significance level. Accordingly, the fear of COVID-19 did not have a significant effect on the perceived value. Hypothesis H3 assumed that health literacy has a statistically positive effect on perceived risk. The standardized regression coefficient obtained in the structural equation model was 0.053 , the p value was 0.335 , and the hypothesis was rejected at the 0.05 significance level. Accordingly, there was no significant effect of health literacy on perceived risk (Figure 2 and Figure 3).

Figure 2

Model Results Table (The dashed arrows indicate the rejected hypotheses, the solid arrows indicate the accepted hypotheses.)



Hypothesis H4 assumed that health literacy has a statistically positive effect on perceived value. The standardized regression coefficient obtained in the structural equation model was 0.057, the p value was 0.284 and the hypothesis was rejected at the 0.05 significance level. Accordingly, health literacy did not have a significant effect on perceived value. Hypothesis H5 assumed that the fear of COVID-19 has a statistically positive effect on customers' risk perceptions. The standardized regression coefficient obtained in the structural equation model was 0.143, the p value was 0.008, and the hypothesis was accepted at the 0.05 significance level. Accordingly, the fear of COVID-19 positively affects the perceived risk. In other words, as the fear of COVID-19 increases, the perceived risk level also increases.

Hypothesis H6 hypothesized that the perceived risk has a statistically negative effect on the perceived value. The standardized regression coefficient obtained in the structural equation model was -0.217 with a highly significant p value, and the hypothesis was accepted at the 0.05 significance level. Accordingly, the perceived risk has a significant effect on the perceived value. As the perceived risk increases, the perceived value levels decrease. Hypothesis H7 assumed that perceived risk has a statistically negative effect on customer satisfaction. The standardized regression coefficient obtained in the structural equation model was 0.071, the p value was 0.103, and the hypothesis was rejected at the 0.05 significance level. Accordingly, perceived risk has no significant effect on customer satisfaction. Hypothesis H8 hypothesized that perceived value has a statistically significant positive effect on customer satisfaction. The standardized regression coefficient obtained in the structural equation model was 0.678 with a good p value, and the hypothesis was accepted at the 0.05 significance level. Accordingly, the perceived value positively affects customer satisfaction. In other words, as perceived value increases, customer satisfaction levels also increase.

Hypothesis H9 assumed that the fear of COVID-19 has a statistically significant positive effect on customer satisfaction. The standardized regression coefficient obtained in the structural equation model was 0.109, the p value was 0.007, and the hypothesis was accepted at the 0.05 significance level. Accordingly, the fear of

COVID-19 positively affects customer satisfaction. In other words, as the fear of COVID-19 increases, customer satisfaction levels increase. Hypothesis H10 assumed that health literacy has a statistically significant positive effect on customer satisfaction. The standardized regression coefficient obtained in the structural equation model was 0.081, the p value was 0.05, and the hypothesis was accepted at the 0.05 significance level. Accordingly, health literacy positively affects customer satisfaction. In other words, as health literacy increases, customer satisfaction also increases (Figure 2 and Figure 3).

Table 4

Model statements, confirmatory factor analysis factor loadings, and composite reliability/average variance extracted (CR/AVE) values.

Scale Expressions		Standardized regression coefficient	CR/AVE values
1. Compared to other products I could buy, these health products (over-the-counter medicines) were a good investment.	Perceived Value	0,662	AVE: 0,588 CR: 0,875 CR>AVE
2. Given the price and the costs , I believe it is a sound decision to purchase these health products.		0,769	
3. I found these health products to be reasonably priced.		0,753	
4. These health products were a great low-cost purchase.		0,677	
5. Given the cost of shopping, it was a good decision to buy these health products.		0,942	
1. I did not make the best use of my money by buying these health products (non-prescription medicines).	Perceived Risk	0,617	AVE: 0,542 CR: 0,853 CR>AVE
2. It would be a smarter move for me to meet my needs by buying different health products.		0,732	
3. I am worried that I am not getting what I am paying for.		0,896	
4. I am concerned that I won't get the full benefit from these health products.		0,767	
5. I am concerned that the health products I buy might cause me to experience physical symptoms such as tension, headaches, or anxiety.		0,635	
2. Research and find information about conditions that can be harmful to your health, such as being overweight, high blood pressure, etc.	Health Literacy	0,734	AVE: 0,501 CR: 0,908 CR>AVE
3. Understand health warnings about conditions that can be harmful to your health, such as being overweight and high blood pressure.		0,772	
4. Research and find information on how to deal with unhealthy behaviors such as smoking and inadequate physical activity.		0,813	
5. Understand health warnings on how to deal with unhealthy behaviors such as smoking and inadequate physical activity		0,808	
6. Research and find information about the health screenings you should have in relation to your age, gender, and health status (such as breast screenings for women and prostate screenings for men)		0,788	

Scale Expressions		Standardized regression coefficient	CR/AVE values
7. Understanding the information recommended to be healthier in sources such as the internet, newspapers, television, radio, etc.		0,736	
10. To evaluate the positive and negative features of the environment you live in (such as home, street, neighborhood) that affect health		0,566	
11. Finding information about what can be done to make the environment you live in (such as home, street, neighborhood) healthier		0,536	
12. Evaluate which of your daily behaviors (such as exercising, eating healthy, not smoking) affect your health.		0,692	
15. Advising your family or friends to be healthier		0,562	
1. I am horrified of the coronavirus (COVID-19).	Fear of COVID-19	0,583	AVE: 0,518 CR: 0,880 CR>AVE
2. Thinking about the coronavirus makes me uncomfortable.		0,557	
3. My hands get cold and sweaty when I think about the coronavirus.		0,913	
4. I am afraid of losing my life due to the coronavirus.		0,697	
5. I get nervous or worried when I see stories and news about the coronavirus on social media.		0,779	
6. I cannot sleep for fear of catching the coronavirus.		0,696	
7. When I think I will catch the coronavirus, my heart starts to race.		0,752	
1. These health products (non-prescription medicines) fully meet my expectations.	Customer Satisfaction	0,818	AVE: 0,741 CR: 0,920 CR>AVE
2. I think I can meet my needs better with these health products than with other products.		0,844	
3. I think I did the right thing by choosing these health products that I need.		0,901	
4. These health products satisfy me in every way.		0,879	

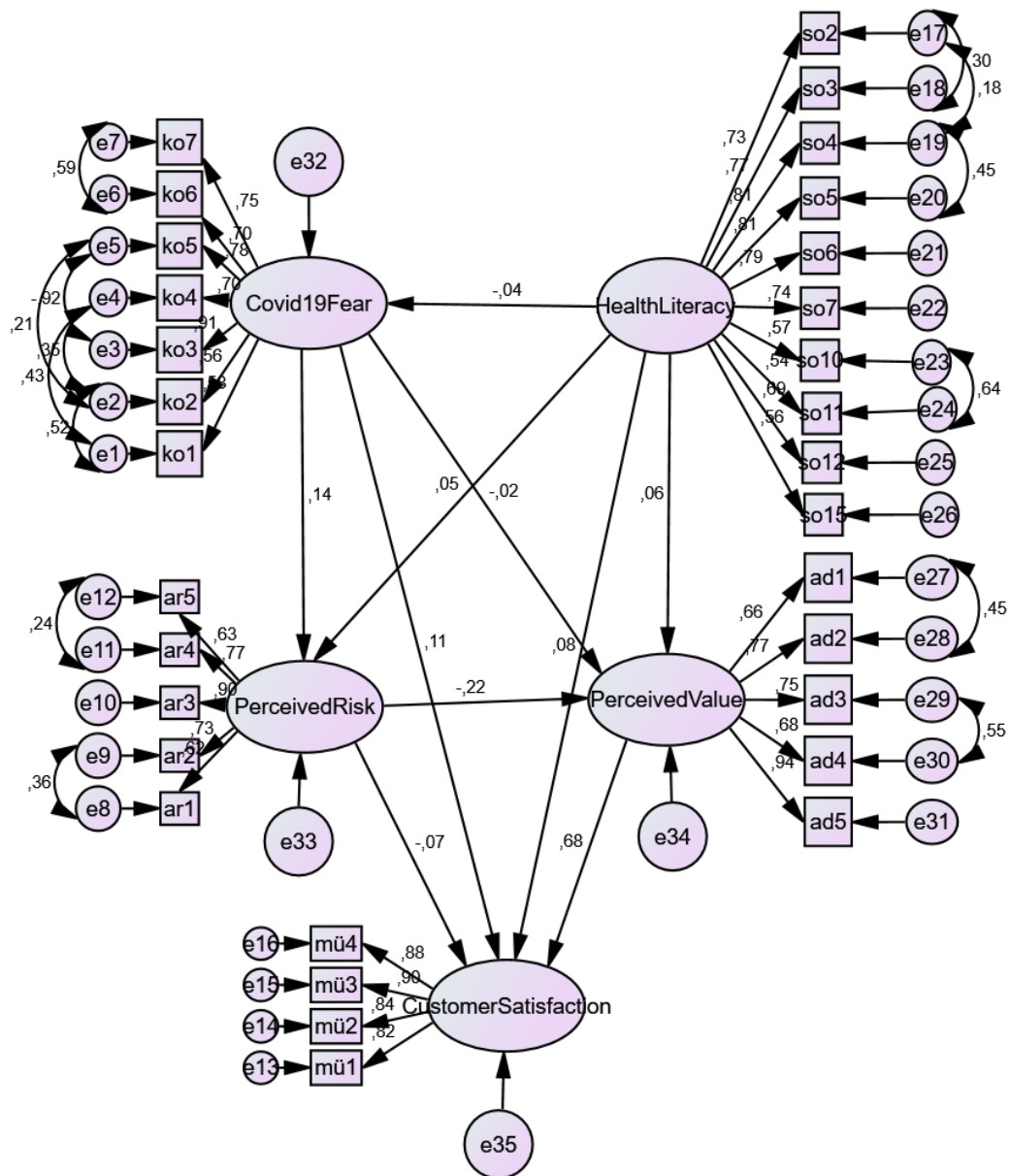
Discussion

The results of the structural model indicate a positive relationship between individuals' health literacy levels and their satisfaction with the services provided by OTC drug retailers. Additionally, the findings suggest that customers' fear levels regarding the COVID-19 also have a positive impact on their satisfaction with these services. The relationship between the positive outcomes that patients anticipate from health services, their satisfaction, and individuals' health literacy levels has been reported in the literature. In their study on organizational health literacy, Hayran and Özer (2018) demonstrated a positive correlation between health literacy and patient satisfaction. They further asserted that patients hospitalized in university hospitals exhibit higher satisfaction and health literacy levels than those in other hospitals, whereas both satisfaction and health literacy levels of patients in state hospitals are comparatively low (Hayran & Özer, 2018). The findings of our study align with those of previous research in this field. Our hypothesis that there is a statistically significant positive relationship between health literacy and customer satisfaction

was accepted at the 0.05 level of significance, with a standardized regression coefficient of 0.081 and p-values of 0.05 obtained in the structural equation model (Hypothesis H10).

Figure 3

Structural Equation Model and Standardized regression coefficients



There is a positive correlation between health literacy and customer satisfaction. In other words, as health literacy increases, customer satisfaction also increases. Individuals with higher health literacy possess greater knowledge about the benefits and side effects of the products they use, and they are more likely to have a positive opinion of these products than individuals with lower health literacy. This is consistent with the findings of studies on patient communication and health literacy in the literature (Wynia & Osborn,

2010). Similarly, the positive correlation between fear of the novel coronavirus (COVID-19) and customer satisfaction is corroborated by the existing literature. Patients who were able to obtain the necessary medications during the pandemic demonstrated higher levels of satisfaction with health care organizations than those who could not do so (Deriba et al., 2020). The level of fear experienced by individuals in relation to the COVID-19 has been identified as a significant factor influencing customer satisfaction. In this study, it was assumed that there is a statistically significant effect between fear of the COVID-19 and customer satisfaction. Furthermore, it was accepted that there is a significant effect at the 0.05 level with a standardized regression coefficient of 0.109 and p-values of 0.007 obtained in the structural equation model (Hypothesis H9). Accordingly, fear of the COVID-19 positively affects customer satisfaction. According to the model, as fear levels increase, customer satisfaction also increases. Likewise, individuals' perception of economic value has a significant effect on customer satisfaction. Accordingly, an increase in the perceived economic value increases customer satisfaction. The relationship between customer perceived value perception and satisfaction is consistent with the literature (Eskiler & Altunışık, 2015; Özbekler, 2019).

The most significant impact of the fear of contracting the COVID-19 on individuals is the pervasive state of uncertainty. In general, situations such as the unpredictability of the methods of combating the disease, especially in the early periods, the fact that the disease may result in death in some individuals while some individuals survive with mild symptoms, and the economic crisis caused by the pandemic environment force individuals to balance more between using more health products to protect their health and increasing economic concerns during the period of the pandemic caused by the COVID-19. Considering these circumstances, it is reasonable to hypothesize that fear of the COVID-19 will influence economic risk perception (Thomas & Feng, 2021). Similarly, the perception of economic value, in contrast to the perception of risk, is a subjective phenomenon that is influenced by the individual's experience and assessment of the worth of the product in question. As previously discussed, the impact of the COVID-19 virus varies considerably from person to person, potentially leading to diverse evaluations of the economic value associated with the disease. However, the underlying risk persists, albeit to varying degrees across individuals.

The study conducted by Yeşilyurt (2018) on the relationship between perceived risk and patient satisfaction revealed that the perceived risk levels of patients did not exert a significant negative effect on their satisfaction (Yeşilyurt, 2018). Similarly, the results of our study indicated that there was no statistically significant relationship between perceived economic risk and customer satisfaction with OTC drugs. However, in our study, hypothesis H5 proposed that fear of the COVID-19 has a statistically significant effect on customers' perceived risk levels. This hypothesis was accepted at the 0.05 level of significance with a standardized regression coefficient value of 0.143 and a p-value of 0.008 obtained in the structural equation model (Hypothesis H5). Consequently, fear of the COVID-19 positively affects perceived risk.

The findings of our study indicate that fear of the COVID-19 did not have a significant impact on individuals' perceptions of economic value. Conversely, the perception of economic risk had a significant effect on the perception of economic value. In the model, it was assumed that the fear of COVID-19 had a statistically positive effect on the perceived value of customers (H2 hypothesis). However, this hypothesis was rejected at the 0.05 level of significance with a standardized regression coefficient value of -0.015 and a p-value of 0.769 obtained in the structural equation model. Consequently, the hypothesis that fear of the COVID-19 would have a significant effect on perceived value was rejected. However, hypothesis H6 proposed that perceived risk would have a statistically negative effect on perceived value, and this hypothesis was accepted at the 0.05 level of significance with a standardized regression coefficient value of -0.217 and a

highly significant p-value (H6 hypothesis). Therefore, it can be concluded that perceived risk has a significant effect on perceived value, consistent with the literature (Agarwal & Teas, 2001).

As the perceived risk increases, the perceived value levels decrease. The literature has examined the perceived economic and health risks in the context of the ongoing pandemic (Nisa et al., 2021). As previously outlined in the model, there is a negative correlation between economic risk perception and economic value perception. Consequently, as individuals' economic risk perception levels increase, their economic value perception will correspondingly decrease. This is because, as economic risk rises, individuals tend to question whether the products they purchase are worth the expense they incur. In contrast, the perceived economic value level of individuals has a positive effect on customer satisfaction, which supports the existing studies on the economic dimension of perceived value and satisfaction (Sánchez-Fernández & Iniesta-Bonillo, 2009). The study tested the H7 hypothesis, which posits that perceived risk has a statistically negative effect on customer satisfaction. The results of the structural equation model yielded a standardized regression coefficient value of -0.071 and a p-value of 0.103 , which led to the rejection of hypothesis H7 at the 0.05 significance level. Consequently, perceived risk has no significant effect on customer satisfaction. However, it is hypothesized that there is a statistically significant positive effect between perceived value and customer satisfaction, and this hypothesis is accepted at the 0.05 level of significance with a standardized regression coefficient value of 0.678 and a good p-value obtained in the structural equation model (Hypothesis H8).

The study indicates that while the fear level associated with the pandemic and the perceived economic value have a significant positive effect on customer satisfaction, the negative effect of the perceived economic risk on the perceived economic value provides an important insight into the indirect effects of the fear associated with the pandemic on customer satisfaction.

A number of studies in the literature have indicated that an increase in health literacy is associated with a reduction in fear of contracting the COVID-19 (Köksal, 2021; Nguyen et al., 2020). Nevertheless, the findings of our study indicate that there is no statistically significant correlation between an individual's level of health literacy and their level of fear associated with the COVID-19. Those with high levels of health literacy are more likely to be aware of the risks associated with uncertainties such as the lack of clarity in treatment protocols and the fact that different variants of the virus cause varying degrees of disease severity in different individuals, particularly in the early stages of the outbreak. These insights may result in heightened levels of fear of COVID-19 among individuals with high health literacy, directly proportional to their awareness of the associated risks. Conversely, a negative correlation between health literacy and fear of COVID-19 may be attributed to factors such as the difficulty in comprehending the gravity of the situation among individuals with limited health literacy and the challenge in interpreting medical treatments and precautions.

From another perspective, the low knowledge, motivation, and competence of individuals with low health literacy about COVID-19 may prevent these individuals from realizing the magnitude of the danger and desensitize them more to the danger. In such cases, the level of fear of COVID-19 may be lower than that of other individuals. In our study, we hypothesized that health literacy does not have a statistically significant effect on the fear of COVID-19, and this hypothesis was rejected at the 0.05 significance level with a standardized regression coefficient value of -0.036 and a p value of 0.488 obtained in the structural equation model (Hypothesis H1). Accordingly, there was no significant effect of health literacy on the COVID-19 fear level. This result is consistent with the result of a study by Shaukat et al. (2021) that found

no association between health literacy and fear of covid-19 but found it associated with health-protective behaviors (Shaukat et al., 2021). Despite the literature studies described above, it can be thought that the lack of a significant effect of individuals' health literacy levels on the fear of COVID-19 in our study may provide different perspectives to the studies that can be conducted in this sense.

The level of health literacy is associated with individuals' use of medicines and their comprehension of prescriptions and drug contents. These factors constitute aspects of health literacy. Additionally, Song et al. (2017) investigated the relationship between reading and comprehending the labels of OTC drugs and health literacy. Their findings indicated that high health literacy was positively correlated with reading and understanding drug labels (Song et al., 2017). In hypothesis H3, it was posited that there is a statistically positive effect of health literacy on perceived risk. The results of the structural equation model yielded a standardized regression coefficient value of 0.053 and a p-value of 0.335, which led to the rejection of hypothesis H3 at the 0.05 significance level. Therefore, it can be concluded that there is no significant effect of health literacy on perceived risk in the context of this study. Similarly, the H4 hypothesis of the study proposed that health literacy has a statistically positive effect on perceived economic value. However, this hypothesis was rejected at the 0.05 significance level with a standardized regression coefficient value of 0.057 and a p-value of 0.284 (H4 hypothesis). Consequently, the study did not yield any significant evidence to support the hypothesis that health literacy affects perceived value.

The reason why there is no effect between individuals' health literacy levels and their perception of economic risk and value may be that health literacy provides individuals with the awareness to make more informed choices in their health product preferences. The expression measured by perceived economic risk and value perceptions is, in general, price-satisfaction risk and value, which means that the product purchased is worth the expense spent and the price paid is worth the price paid. Whether health literacy, which is expressed as knowledge, motivation and competence, has a positive or negative effect on economic risk and value may vary with the motivation that knowledge provides to individuals. In particular, the fact that the value and risk perceptions of individuals who are motivated by their knowledge and experience about the harmful and side effects of drugs and individuals who are motivated by their knowledge and experience about the benefits and protective effects of drugs are different may explain the lack of a statistically significant effect between health literacy and risk and value perception levels. In addition to all these, the fact that customers' health literacy levels have a positive effect on satisfaction can be explained by their selectivity and motivation in product preferences, as mentioned above. This situation is important in terms of providing ideas for future studies.

Conclusion

The objective of this study was to examine the influence of individuals' health literacy levels on their consumption of health products during the pandemic caused by the COVID-19. To achieve this, the effect of perceived risk and the economic dimension of perceived value on customer satisfaction in individuals' preferences for OTC medicines was measured with a survey study. A structural equation model was constructed using the data obtained. First, a CFA was conducted, during which some statements and the "purchase intention scale" were excluded from the model. This was because the goodness of fit values could not be calculated and did not provide acceptable goodness of fit values, as stated in the analysis and findings section. Subsequently, the scales pertaining to health literacy, fear of contracting the virus, perceived value, perceived risk and customer satisfaction were subjected to structural equation modeling following the completion of the CFA, given that the fit values were deemed to be satisfactory.

The study revealed a positive correlation between health literacy and customer satisfaction. In other words, an increase in health literacy is associated with an increase in customer satisfaction. Similarly, an increase in the fear of contracting the virus is associated with an increase in customer satisfaction. Another factor that positively affects customer satisfaction is the perceived economic value. In other words, as the perceived value increases, customer satisfaction levels also increase. However, the perceived economic risk did not have a significant effect on customer satisfaction.

The perception of economic risk exerts a substantial negative influence on the perception of economic value. As perceived economic risk increases, individuals tend to perceive lower levels of economic value. The fear of contracting the COVID-19 has been found to have a positive effect on perceived risk. In other words, as the fear of COVID-19 increases, so too does the perceived level of risk. However, the fear of contracting the virus did not have a significant effect on the perceived economic value.

The COVID-19 pandemic has impacted individuals' consumption behavior, as discussed in the third section. Since there is no significant effect between individuals' health literacy levels and their perceived economic risk and value levels, it is expected that health literacy will guide health product sellers and health service providers in reducing the perceived economic risk and increasing the perceived economic value in the consumption of health products. The fact that increasing health literacy levels increases consumer satisfaction, independent of perceived economic risk and value, shows that individuals' health literacy affects the satisfaction of consumers of health products in other ways. These results are important in terms of guiding studies on the reasons affecting consumer satisfaction.

Limitations and Recommendations

In this study, a face-to-face questionnaire was administered to individuals who had sought treatment at the emergency room of Prof. Dr. Süleyman Yalçın City Hospital, as well as to patients and their relatives who were hospitalized in the hospital units. Furthermore, the Google survey method was employed to reach individuals who had used OTC drugs through social networks, thus expanding the sample group. It is possible to conduct different studies with different sample groups and to compare the resulting data.

Furthermore, this study aimed to gain insight into the consumption of health products by using OTC medicines. Accordingly, further studies could be conducted with different health products.

In the construction of the questionnaire, consideration was given to the inclusion of items on the "Disease Prevention/Health Promotion" dimension of the health literacy scale. The study also incorporated the economic dimensions of the perceived risk and perceived value scales. It is possible to renew the model by including different dimensions in future studies. Furthermore, our study examined the relationship between individuals' health literacy and consumption of health products during the pandemic caused by the COVID-19. Note that the results may vary if the study is conducted at a different time point.

The objective of ensuring consumer satisfaction is to reduce the incidence of unnecessary and harmful drug use. Furthermore, it will result in a reduction of unnecessary applications of individuals to health service providers, thereby facilitating the reallocation of resources to more urgent services in times of crisis. It may therefore be recommended that the necessary policy decisions be taken and implemented with a view to expanding the studies carried out for the general population, with a view to increasing the level of health literacy.

The correlation between the level of fear of the COVID-19 and the level of perceived economic risk suggests that the risk of price satisfaction, or the risk perception of getting the value of the price paid when

purchasing medicines in times of crisis, has increased. This situation may necessitate the implementation of additional policies to address the concerns of all individuals regarding spending on health products, particularly in times of crisis.



Ethics Committee Approval	The obtained the necessary official permissions from İstanbul University's Ethics Committee (Date: 29.06.2021, decision: 2021/157).
Informed Consent	Consent was obtained from the participants.
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