JBACHS
Journal of Basic and Clinical Health Sciences

J Basic Clin Health Sci 2024; 8: 1-11
https://doi.org/10.30621/jbachs.875825
RESEARCH ARTICLE

THE PREDICTION OF HEALTH LITERACY OF PARENTS WHO HAVE CHILDREN WITH CANCER ON THEIR HEALTHCARE SATISFACTION

Aslı Akdeniz Kudubes[1], İlknur Bektas[2], Dijle Ayar[3], Murat Bektas[4]

[1] Bilecik Şeyh Edebali University, Faculty of Health Sciences, Department of Pediatric Nursing, Bilecik, Turkey
[2] Bakırçay University, Faculty of Health Sciences, Department of Pediatric Nursing, İzmir, Turkey
[3] Alanya Alaaddin Keykubat University, Faculty of Health Sciences, Department of Pediatric Nursing, Antalya, Turkey
[4] Dokuz Eylul University, Faculty of Nursing, Department of Pediatric Nursing, İzmir, Turkey

ORCID: A.A.K. 0000-0002-0911-8182; İ.B. 0000-0001-8048-9501; D.A. 0000-0001-5196-2355; M.B. 0000-0003-3327-8204

Corresponding author: Aslı A. Kudubes, **E-mail:** asliakdeniz@hotmail.com
Received: 07.02.2021; **Accepted:** 31.10.2023; **Available Online Date:** 31.01.2024

Cite this article as: Akdeniz-Kudubes A, Bektas I, Ayar D, Bektas B. The Prediction of Health Literacy of Parents Who Have Children with Cancer on Their Healthcare Satisfaction. J Basic Clin Health Sci 2024; 8: 1-11.

ABSTRACT

Purpose: This study was a descriptive and cross-sectional study to examined the prediction of health literacy of parents having children with cancer on the healthcare satisfaction.
Material and Methods: The descriptive and cross-sectional study was conducted between January and May 2019 and included 207 parents who had children treated at the pediatric hematology-oncology unit of a university hospital. A parental information form, the Health Literacy Index, and the Pediatric Quality of Life (PedsQL) Inventory Healthcare Satisfaction Hematology/Oncology Module parental report was used to collect the data. Percentage calculations, mean values, Pearson's correlation analysis, linear regression analysis, and multiple correlation analysis were used to analyze the data.
Results: According to the relationship between variables in regression analysis, five models were created. Each subscale in the Health Literacy Index was identified as a separate model. In the last model, the effect of the total score of the Health Literacy Index on PedsQL Healthcare Satisfaction Hematology/Oncology Module was determined. According to these models, healthcare satisfaction increased as the health literacy subdimension scores and total scores increased. Increased scores of the Health Literacy Index were found to promote healthcare satisfaction.
Conclusion: The ability of parents to manage their children's disease process and daily life activities becomes better as their health literacy levels increase.

Keywords: cancer, health literacy, healthcare satisfaction, parents

INTRODUCTION

The decisions taken by patients and their relatives about diseases such as cancer significantly affect the effectiveness and quality of the healthcare services they receive. These decisions are a result of their health-related skills, capacities, and knowledge. This situation is termed "health literacy" in the literature (1). Health literacy is a cognitive and social skill related to the individual's access to, understanding, and use of health information for maintaining and developing the health (1,2). Health literacy increases the span and quality of life and assists healthcare recipients to participate in care-related decision-making processes (1). Nearly half of the European population have low health literacy and 35% had problematic health literacy (3). The general health literacy index in

Turkey is 30.4%, 24.5% of the population is incompetent in health literacy, and 40.1% has poor health literacy levels (4). The low level of health literacy results in several negative effects both at individual and health system levels. These negative effects include healthcare use and costs, increased complications and number of deaths, non-compliance to treatment, decreased quality of life, and dissatisfaction with the healthcare system (1). Therefore, determining the level of health literacy is important. Health literacy level measurement tools differ in terms of application and evaluation. These tools vary depending on the purpose of the practitioner or the extent of health literacy to be evaluated. For example, the Test of Functional Health Literacy in Adults, the Newest Vital Sign, Europe SOY Scale, the Turkish version of the European Health Literacy Scale, and Turkey Health Literacy Adults Scale-32 are used in performing a comprehensive evaluation. More than 20 scales are available to measure the health literacy level (5–7).

Health literacy in patients with cancer is important in managing the symptoms and achieving self-care using preventive healthcare services, thus increasing healthcare satisfaction and the quality of life. Low health literacy in children with cancer and parents and relatives leads to an inadequate search for medical care in symptomatic periods, reduced healthcare satisfaction, inadequate self-care, and inadequate management of the chronic disease (8). Especially in cancer populations and their caregivers, health literacy level is positively associated with the quality of healthy life. Low health literacy levels can lead to misconceptions about the disease and its prognosis, causing dissatisfaction and anxiety in terms of care (8). Therefore, it is essential to increase the health literacy levels of patients with cancer and their parents and relatives (1). A high health literacy level does not indicate the dissemination of the right information. To achieve this, it is necessary to reach the right resources and evaluate the information appropriately. Thus, getting the right health literacy is important for parents of children with cancer. While providing care, pediatric nurses can play an important role as an education provider and counselor by considering the health literacy levels of children and their parents, and by planning and implementing customized care. This acts as a crucial factor in increasing patient healthcare satisfaction (9).

One of the criteria for healthcare quality is patient satisfaction. Patient satisfaction is a conclusion derived from a comparison between expectations and the perceived circumstances. A performance above expectations is evaluated positively by individuals, whereas a performance below expectations is perceived negatively. This degree of acceptance has a decisive and direct effect on healthcare satisfaction (10). If the expectation level of patients is low, and their minimum expectations are being met, their satisfaction level will be high. In contrast, if patients have little expectations and their health literacy level is low, and they have little knowledge about healthcare, they will be more satisfied with the healthcare service they are provided (10).

Healthcare satisfaction is influenced by individual characteristics of the person, the physical structure of the institution providing the healthcare, medical competence, reliability and communicative capacity of the healthcare personnel, attitude and behavior of the healthcare personnel toward patients, whether adequate information is provided to patients, and health literacy levels of patients and their parents and relatives (11). Determining the healthcare satisfaction levels of patients and their relatives is essential in planning and evaluating the healthcare and provision of more qualified services to meet their expectations (12). This can be achieved by increasing the number of studies on the importance of the relationship between patient satisfaction and health attitude and behavior.

Health satisfaction and health literacy levels of parents with children with cancer are an important issue in child nursing. One of the important factors that prevent parents from gaining knowledge and awareness about childhood cancers is stigmatization. Due to stigma, parents find it difficult to get information from people other than healthcare professionals and from learning resources about cancer-confusing issues (8). Therefore, adequate health literacy levels of these families are an important requirement. Increasing the level of health literacy in these individuals can contribute to reducing health inequalities. Also, the awareness and awareness of the parents about the cancer process is increasing, with the health literacy level increasing. Pediatric nurses must pay attention to their health literacy levels in their education to parents. Because the content and technique of education will change according to the knowledge of the parents (8).

An analysis of studies handling several cancer types on the effect of health literacy on the healthcare satisfaction of parents having children with cancer

was conducted that revealed that there exists no study showing the relationship between health literacy and healthcare satisfaction. Therefore, studies investigating the effects of health literacy on healthcare satisfaction of parents having children with cancer are necessary (11,12).

MATERIAL AND METHODS

Objective

This present study was a descriptive and cross-sectional study to examined the prediction of health literacy of parents having children with cancer on the healthcare satisfaction.

Population and Sample

The calculation of the sampling required for the study was performed using the G*POWER 3.0 statistical analysis software based on a 0.05 significance level, 95% power, and 0.15 effect size, eight variables in regression analysis. The effect size was taken as 0.15 in this study. The effect size was taken as 0.15 because regression analysis was used in this study. In the literature, it is stated that if there is not enough data on the subject in calculating the sample size, the relevant test should use the medium effect size (13). Since regression was used in this study, 0.15 was used in the sample size calculation, since the medium effect size corresponded to 0.15 in the regression analysis. Thus, the sample size required for regression analysis was determined as 74 subjects. Although at least 74 people were required to determine the minimum relationship in this study, all parents who agreed to participate in the study were included in order to clearly demonstrate the strength of the relationship between the variables and to increase the generalizability of the results. The study was conducted between January and May 2019 and included 207 parents having children treated at the pediatric hematology-oncology unit of a university hospital. Parents who were older than 18 years, and whose child had been receiving treatment in the pediatric hematology-oncology unit, and who volunteered to participate in the study were enrolled in the study. Parents of all children with cancer who came to be treated between January and May 2019 were invited to participate in the study. All of these parents participated in the study and the rate of participation and filling in surveys is 100%.

Ethical Considerations

Ethical approval was received from the Non-Invasive Clinical Studies Ethics Committee of the University (Date: 30.01.2019, Decision no: 2019/02–03). The researcher informed the parents about the aim of the study and obtained written consent forms from them.

Data Collection Tools

The data were collected using a parental information form, the Health Literacy Index, and the Pediatric Quality of Life Inventory (PedsQL) Healthcare Satisfaction Hematology/Oncology Module parental report.

The Parental Information Form

The form consisted of seven items. The first five items included questions on socio-demographic characteristics of patients (age, gender, educational status, income status, and employment status), whereas the remaining two items included questions on who the caregiver was and how often the participants used social media, because social media websites, such as Facebook, YouTube, and Twitter, also serve as a growing source of health care information. Social media is a preferred source of health information for those who frequently use social media sites for health purposes.

Health Literacy Index

The 47-item Health Literacy Index in Europe Questionnaire was developed by Sorensen in 2012 (14). It was later simplified by Tochi, Bruzari, and Sorenson (2013) and was given the final form (15). The Turkish validity and reliability study of the scale was conducted by Bayik and Aras in 2017 (2). The version of the Health Literacy Index used in this study consisted of 25 items and four subscales. The subdimension “Accessing Information” comprises five items. The “Understanding Information” subdimension includes seven items. The subdimension “Appraising” contains eight items. The “Applying” subdimension contains five items. Besides, the minimum and maximum scores that can be obtained from the entire scale are 25 and 125, respectively. The responses to items are in Likert type as follows: “5: I have no difficulty; 4: I have little difficulty; 3: I have some difficulty; 2: I have many difficulties; 1: I am not able to do it/I have no ability/

impossible." All items of the scale are positive, and there is no inversed item. The scale-level internal consistency coefficient (Cronbach's alpha) is 0.92, and Cronbach's alpha coefficients for the subdimensions range from 0.62 to 0.79. Low scores indicate that health literacy is inadequate, problematic, and poor, whereas high scores show that health literacy is adequate and very good. Increased scores indicate increasing the health literacy level of the individual (2,15). The Cronbach alpha reliability coefficient of the total scale was found to be 0.90 and of the subdimensions range from 0.68 to 0.81 in this study.

The Pediatric Quality of Life Inventory Healthcare Satisfaction Hematology/Oncology Module Parental Report

This inventory was developed by Varni et al. (2000). The authors also conducted its reliability and validity study. The Turkish validity and reliability study of the scale was conducted by Tanır and Kuğuoğlu (2012). The scale consists of 25 items and six subscales: overall satisfaction (three items); information (five items); inclusion of family (four items); communication (five items); technical skills (four items); and emotional needs (four items). The inventory has a parental module only. The responses in the 5-point Likert type inventory are as follows: 1 = Never satisfied; 2 = Not satisfied; 3 = Undecided; 4 = Satisfied; and 5 = Always satisfied. With the increase in the scores obtained from the scale, healthcare satisfaction increases. Cronbach's alpha coefficient of the total scale is 0.974 and Cronbach's alpha coefficients for the subdimensions range from 0.86 to 0.95 (16,17). The Cronbach alpha reliability coefficient of the total scale was found to be 0.94 and of the subdimensions range from 0.88 to 0.95 in this study.

Data Collection

The researchers collected the data during daily visits to the pediatric oncology clinic. After they interviewed the parents who met the inclusion criteria, researchers asked the parents to fill in the data collection forms in the clinic's single-patient rooms. The parents took approximately 10 to 20 min to fill out the data collection forms.

Data Analysis

Mean and percentage calculations were used for evaluating descriptive data. The significance level was accepted as 0.05. The Shapiro–Wilk test was used for the normal distribution of scale mean scores according to the variables included in the regression model. Pearson's correlation analysis was used to analyze the relationship between health literacy and healthcare satisfaction. Linear regression analysis was used to determine the extent to which health literacy status predicted healthcare satisfaction, and multicollinearity examined by Variance Inflation Factor (VIF) and tolerance analysis. The skewness and kurtosis values were between - 2 and + 2. Residual values are between -0.894 and 3.624.

RESULTS

The mean age of children was 10.83 + 4.46 years, and the mean diagnostic time of children was 11.03 + 4.86 months. The length of stay of children in the hospital was 8.62 + 3.36 days; 50.8% of children were male, and 49.2% of children were female. Among them, 63.8% of them were in remission, and 40% were diagnosed with hematologic cancer types. As part of the treatment, 55.4% underwent all types of treatments (chemotherapy, radiotherapy, surgery, and bone marrow transplantation). The mean age of parents was 37.31 + 6.69 years, and 73.4% of them were female, and 56.5% were high school graduates. Further, 72% of them were unemployed, and 73.4% of them had low socioeconomic level. The use of social media tools was frequent in 30.4% of parents. Also, the percentage of different social media use by parents was Facebook, 30.4%; Instagram, 27.5%; YouTube, 26.1%; and Twitter, 23.7%. The mean score of the parents on the Health Literacy Scale is 95.29 + 32.95 (Minimum = 25.00; Maximum: 125.00) and the mean score on the Health Care Satisfaction Scale is 98.02 + 25.97 (Minimum = 25.00; Maximum: 125.00). Table 1 presents the effect of the characteristics of parents on their health literacy and health care satisfaction levels. As a result of the analysis, there is a statistically significant relationship between the age, educational status, economic situation and social media frequency of the parents, and health literacy and health care satisfaction ($p < 0.05$, Table 1). By using the Mann Whitney U test with Bonferroni correction, it was determined which measurement resulted from the difference in the age, educational status, economic status and frequency of social media use of the parents. As a result of the test, it was determined that there was a difference between the parents in the 20-29 and 30-39 age groups according to age, and there was a difference

Table 1. The Effect of The Characteristics of Parents on Their Health Literacy and Health Care Satisfaction Levels

Characteristics of Parents		Health Literacy		Health Care Satisfaction	
		Mean	**SD**	**Mean**	**SD**
Gender	Female	97.72	33.11	99.90	26.90
	Male	88.60	31.83	92.83	22.65
	Test value	*t: 1.802*		*t: 1.882*	
	p	*p: 0.075*		*p: 0.062*	
Marital Status	Married	95.23	33.55	97.86	26.55
	Single	95.89	27.03	99.63	19.91
	Test value	*t: -0.098*		*t: -0.357*	
	p	*p: 0.923*		*p: 0.724*	
Age	20-29	120.29	5.98	117.52	8.41
	30-39	107.60	25.97	105.59	22.55
	40-49	71.00	31.54	81.82	25.38
	50 and above	51.25	6.78	71.00	18.13
	Test value	*F: 42.174*		*F: 24.655*	
	p	*p: 0.000**		*p: 0.000**	
Educational status	Literate	46.11	6.48	67.64	17.26
	Primary school	78.75	34.54	79.48	26.25
	Middle school	84.55	38.64	86.66	29.10
	High school	107.49	23.23	108.04	19.31
	University and higher education	115.48	15.87	117.38	14.47
	Test value	*F: 26.593*		*F: 20.892*	
	p	*p: 0.000**		*p: 0.000**	
Working status	Working	92.18	32.95	95.10	23.63
	Not working	96.51	32.98	99.16	26.82
	Test value	*t: -0.847*		*t: -1.067*	
	p	*p: 0.399*		*p: 0.288*	
Economic status	Less than income	91.55	32.93	95.88	26.43
	Equal to income and expense	105.63	31.00	103.94	23.89
	Income more than expenses	-	-	-	-
	Test value	*F: 7.607*		*F: 3.947*	
	p	*p: 0.006**		*p: 0.048**	
Parents status	Mother	96.31	34.29	98.83	27.70
	Father	92.26	28.65	95.59	20.02
	Other	-	-	-	-
	Test value	*F: 0.586*		*F: 0.605*	
	p	*p: 0.445*		*p: 0.437*	
Social Media Usage Frequency	Never	59.39	30.01	74.66	20.11
	Rarely	61.73	31.31	68.26	26.14
	Sometimes	91.77	22.48	87.61	17.29
	Often	110.78	20.35	108.11	15.71
	Always	116.24	18.02	118.67	12.50
	Test value	*F: 51.769*		*F: 63.442*	
	p	*p: 0.000**		*p:0.000**	

SD: Standart Deviation; t: Student t Test; F: Oneway ANOVA Test; *p<0.05

between high school graduates and university graduates according to education level. In addition, it has been determined that there is a difference in parents with equal income-expenditure levels according to their economic status, and there is a difference in parents who use social media frequently or always according to the frequency of use of social media ($p < 0,05$, Table 1).

As the health literacy scale total score and sub-dimensions increase, health care satisfaction increases ($p < 0.001$, Table 2). Similarly, As the frequency of social media usage increases, health care satisfaction increases ($p < 0.001$, Table 2).

According to the relationship between variables in univariate regression analysis, five models were created (Table 3, Figure I). Each subscale in the Health Literacy Index was identified as a separate model. In the last model, the effect of the total score of Health Literacy Index on PedsQL Healthcare Satisfaction Hematology/Oncology Module was determined. The health literacy of parents increased with the increase in the total score obtained from the Health Literacy Index. As the total score obtained from the healthcare satisfaction scale increased, the healthcare satisfaction of the parents increased. In the first model, while accessing the information subscale affected 76.1% of the healthcare satisfaction of parents, as accessing the information subscale of health care literacy increases by one unit healthcare satisfaction increases by 0.872 times (95% Confidence Interval [CI] 3.123 to 3.750). In the second model, understanding the information

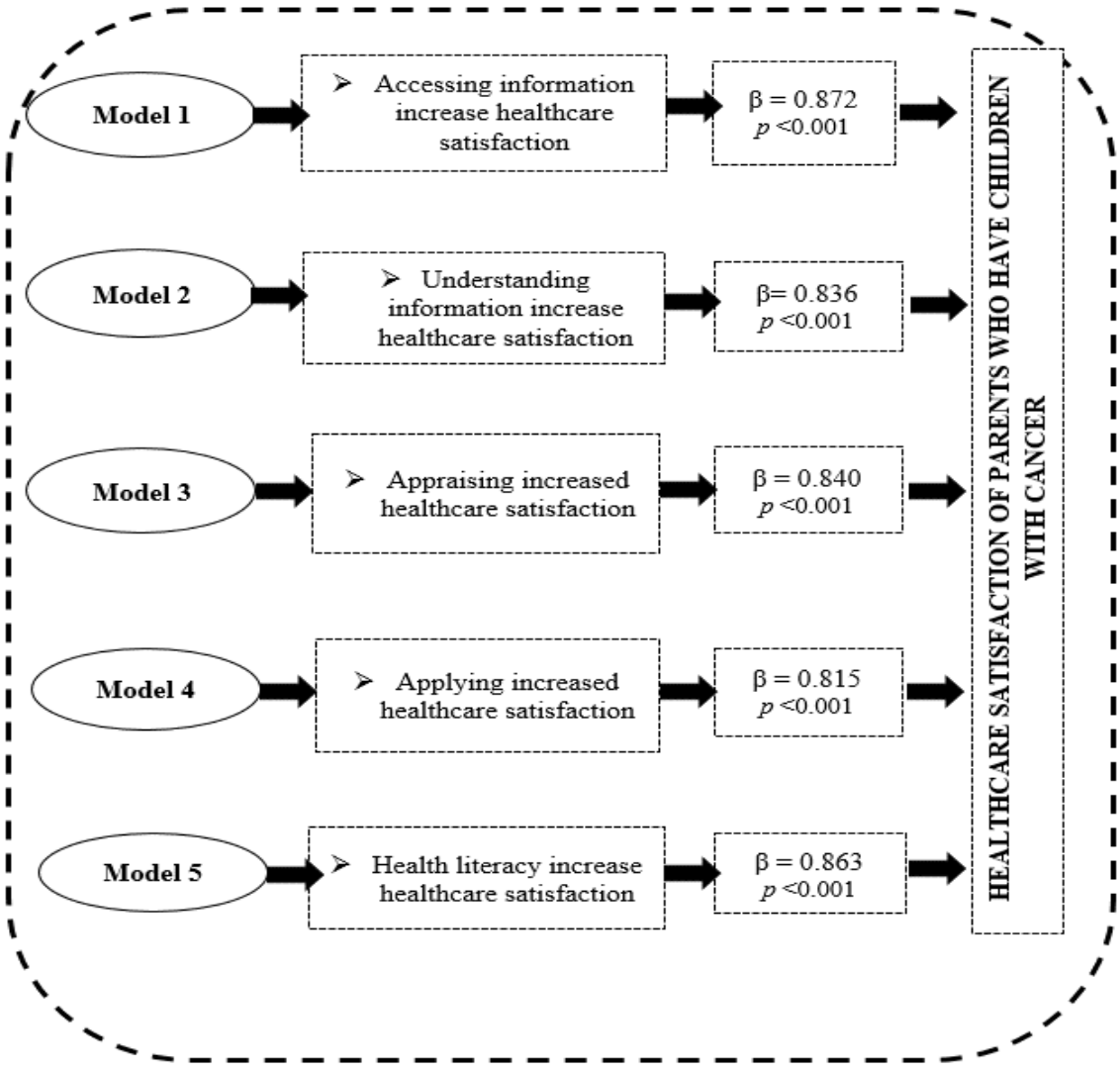

Figure 1. Model of factors impacting healthcare satisfaction of parents with children having cancer

Table 2. Correlation between Health Literacy and Healthcare Satisfaction

		1	2	3	4	5	6	7
1.	**PedsQL Healthcare Satisfaction Hematology / Oncology Module**	1						
2.	**Health Literacy Index (HLI)**	0.863*	1					
3.	**HLI Accessing Information Subdimension**	0.872*	0.975*	1				
4.	**HLIUnderstanding Information Subdimension**	0.836*	0.983*	0.945*	1			
5.	**HLI Appraising Subdimension**	0.840*	0.990*	0.946*	0.974*	1		
6.	**HLI Applying Subdimension**	0.815*	0.933*	0.906*	0.873*	0.918*	1	
7.	**Frequency of Use of Social Media**	0.714*	0.690*	0.700*	0.668*	0.658*	0.673*	1

*p<0.01 significant level

subscale affected 69.9% of the healthcare satisfaction of the parents, as understanding the information subscale of health care literacy increases by one unit healthcare satisfaction increases by 0.836 times (95% CI 2.018 to 2.419). In the third model, the "Appraising" subdimension was found to affect 70.6% of healthcare satisfaction, as the appraising subscale of health care literacy increases by one unit healthcare satisfaction increases by 0.840 times (95% CI 1.815 to 2.169). In the fourth model, the "Applying" subdimension was found to affect 66.5% of healthcare satisfaction, as applying the subscale of health care literacy increases by one unit healthcare satisfaction increases by 0.815 times (95% CI 2.935 to 3.572). In the fifth model, health literacy, along with accessing information, understanding information, and applying subdimensions, were found to affect 74.5% of healthcare satisfaction, as health care literacy increases by one unit healthcare satisfaction increases by 0.863 times (95% CI 0.626 to 0.735). The effect of all factors on healthcare satisfaction was statistically significant ($p < 0.05$).

DISCUSSION

In this study, it was thought that the health literacy level of the parents of children with cancer may affect health care satisfaction. As a result of further analysis in this study, it was found that the parents who have 20-40 years of age, high school or higher education level, income and expense equal, use social media often and always have higher health literacy and health care satisfaction levels. In the literature, it is stated that the studies examining the health literacy and health care satisfaction of parents are affected by variables such as age, gender, educational status, economic status, employment status, frequency of social media, and internet use (18,19). In the study of Terp et al. (2021), it is emphasized that health literacy increases as age decreases (19). In addition, in the study of Papavasiliou et al. (2021), it is emphasized that the health literacy level of young people, those with a medium perceived economic level and those with a high education level are higher (18). In two studies examining the factors affecting satisfaction in terms of health, it is stated that it is affected by variables such as age, education level and income level (20,21).

Our study found a positive and high-level relationship between healthcare satisfaction and health literacy total and subdimension scores and between healthcare satisfaction and frequency of social media use ($p < 0.001$). Similar to our study, other studies have shown that increased health literacy levels affected the healthcare satisfaction of parents (18,19). Besides, the use of social media increased the communication between parents of children with cancer and directed each other to the right resources. Thus, parents can gain access to the right literature via social media, which increases their health literacy levels. In addition, when the literature is examined, it is emphasized that the correct use of technology affects health literacy positively (22). In addition, it is stated that the use of social media has an effect on health care satisfaction (21).

Based on the correlations between the variables, five models were formed in the study. In these five models that examined the health literacy level of parents of children with cancer, the importance of dimensions of

Table 3. The Prediction of Health Literacy of parents raising children with cancer, on the Healthcare Satisfaction

	Health Literacy Index (HLI)											
Healthcare Satisfaction *	Model 1				Model 2				Model 3			
	B	SE	β	p	B	SE	β	p	B	SE	β	p
	3.482	0.136	0.872	0.000	2.219	0.102	.836	0.000	1.992	0.090	0.840	0.000
R	0.872				0.836				0.840			
R^2	0.761				0.699				0.706			
F	652.456				476.110				491.977			
P	0.000				0.000				0.000			
DW	2.468				2.610				2.411			

Healthcare Satisfaction *	Model 4					Model 5		
	B	SE	SE	β	p	B	SE	β
	3.253	0.161	0.815	0.000	0.681	0.028	0.863	0.000
R	0.815					0.863		
R^2	0.665					0.745		
F	406.063					599.332		
P	0.000					0.000		
DW	2.369					2.541		

* PedsQL Healthcare Satisfaction Hematology / Oncology Module; B: Unstandardized Coefficients Beta; SE: Coefficients Standard Error; β: Standardized Coefficients Beta; DW: Durbin Watson

access to information, understanding, evaluation, and application of information on healthcare satisfaction were revealed (Figure 1). Model 1 shows that healthcare satisfaction increased as the "Assessing Information" subdimension of the Health Literacy Index scores increased (β = 0.872). It was determined that the parents who had easy access to information had higher levels of healthcare satisfaction. Health literacy is important in accessing information regarding correct health applications. Parents with a high level of health literacy are more eager to have access to the right information (11). Moreover, they are aware of practices that have low reliability for their children's health. Thus, parents with high health literacy access the right sources for their children's treatment and care and are satisfied with the information they receive from health professionals and their satisfaction is positively affected (23). It is stated that reaching effective treatment and care with correct information and information is an important variable in determining health care satisfaction. It is believed that parents' knowledge of how to access the right source of information increases their healthcare satisfaction as they become satisfied with the care and treatment that they expect from healthcare workers (11,12,23). Literature supports the findings in Model 1 that healthcare satisfaction increased as the scores obtained from the "Accessing Information" subdimension of the Health Literacy Index increased (18,19).

Model 2 indicates that healthcare satisfaction increased as the "Understanding Information" subdimension of the Health Literacy Index scores increased (β = 0.836). Parents of children with cancer who had high health literacy levels found it easier to understand the information about their child's care

than those with a low level of health literacy. The healthcare satisfaction of parents with children with cancer increases as their level of understanding of the information increases. Factors such as frequent and repeated training sessions held by healthcare professionals, accessing the right resources in a digital medium, high health literacy of parents regarding diseases and treatment facilitated parents' understanding of information (20). It is stated in the literature that the level of health literacy of people who understand, absorb, and apply the information is higher. The education of the parents of children with cancer is given by healthcare professionals and directed to the right resources. It is emphasized that repeated information about the disease and its management is important (22). Also, parents who are directed to the right resources by healthcare professionals can access correct information about disease and treatment management themselves. These practices are thought to increase satisfaction by increasing health literacy (20,21). Thus, it was observed that the healthcare satisfaction of parents with a high level of skills for recognizing misinformation increased. The literature supports the finding that healthcare satisfaction increases as the scores for the "Understanding Information" subdimension of the Health Literacy Index increases (11,19,23).

Model 3 shows that healthcare satisfaction increased as the scores of the "Appraisal" subdimension of the Health Literacy Index increased (β = 0.840). Parents evaluating and making sense of the information they learned through health literacy improves their health care satisfaction. The awareness among parents created by cancer diagnosis and treatment helps them seek healthy lifestyle behaviors, exhibit healthy life behaviors, avoid harmful behaviors, and take a rational stand against health/disease states. To demonstrate these behaviors, parents access information from several health-related sources, receive information and support from health professionals, and question whether the information and support they receive are meaningful and correct. It is believed that the information, guidance, and support that parents receive from health professionals increase their health care satisfaction (24). The literature supports the finding that healthcare satisfaction increases as the scores for "Appraisal" subdimension of the Health Literacy Index increases in Model 3 (11,19,23).

Model 4 demonstrates that healthcare satisfaction increases as the scores of the "Applying" dimension of the Health Literacy Index increase (β = 0.815). Parents of children with cancer spend efforts to access a variety of health information, especially for getting support for symptom management. Parents receive support from health-related sources (such as health personnel, books, and data in the digital environment) to identify the interventions to reduce the symptoms of their children, to access appropriate nutrition sources for their children, and to manage disease-related complications. The information and support provided to parents help them give better care to their children; it becomes easier for them to cope with the condition. The health literacy levels of parents who accessed and used accurate and reliable health resources increased (23). It is believed that thanks to the information and support they receive from the health professionals, parents can easily access and apply health information, which includes effective interventions to reduce the symptoms experienced by their children, and this situation increases health care satisfaction. In model 4, the literature supports the finding that healthcare satisfaction increased as the scores for "Applying" subdimension of the Health Literacy Index increased (11,19,23).

Model 5 shows that healthcare satisfaction increased as the scores for the Health Literacy Index increased (β = 0.863). In this study, the mean total score of the Health Literacy Index was found to affect healthcare satisfaction by 74.5%. Several factors affect parents' healthcare satisfaction, including individual characteristics, sustainable communication, making people feel valuable, presentation and sustainability of the service, adequate supply of information, and health literacy. For this reason, 74.5% of the influence of health literacy on healthcare satisfaction of parents whose children were hospitalized for a long time for intensive care, who had to cope with various symptoms, and whose healthcare satisfaction was influenced by several variables is believed to be considered good. The literature supports the finding that healthcare satisfaction increased as the total scores of the Health Literacy Index increased in model 5 (1,11,19,23).

Limitations

Despite the many strengths of this study, it is limited by the use of the convenience sample, which may

affect the generalizability of the study. The second limitation of this research is; participants may be affected by other conditions in the clinic during data collection.

Implications for Nursing Practice

Because of the healthcare satisfaction of parents having children with cancer and who need information and support for the disease and treatment process is affected by several factors, conducting studies that investigate these factors is important. Besides, conducting interventional studies aiming to increase health literacy, which is one of these factors, is recommended. Furthermore, understanding the relationship between knowledge and behaviors of parents is important so that our interventions can affect behaviors that are most closely associated with positive health outcomes. Therefore, pediatric healthcare providers should consider tailoring education or treatment plans or utilizing universal measures for parents with low health literacy. The creation of websites by health professionals where the parents of children with cancer can access the correct information and which refer the parents to these information tools will increase both health literacy and healthcare satisfaction.

CONCLUSION

Healthcare satisfaction of parents with a high overall score from the Health Literacy Index and high scores from its subdimensions were found to be positive. Health literacy, along with accessing information, understanding information, and applying subdimensions, increased parents' healthcare satisfaction. Also, a highly positive, advanced level significant relationship between healthcare satisfaction and health literacy was observed. Attempts to enhance the health literacy of parents having children with cancer, improving the symptom management of parents, reducing their caregiving burdens, and guiding them to preventive services are significant initiatives to increase and improve the quality of life of patients and healthcare satisfaction.

Acknowledgements: We would like to thank all the participants.
Author contribution: Conceptualization; Aslı Akdeniz Kudubeş; Data curation; Aslı Akdeniz Kudubeş, İlknur Bektaş, Dijle Ayar; Formal analysis; Aslı Akdeniz Kudubeş, Murat Bektaş; Funding acquisition; Aslı Akdeniz Kudubeş; Investigation; Methodology; Aslı Akdeniz Kudubeş; Project administration; Aslı Akdeniz Kudubeş; Resources; Aslı Akdeniz Kudubeş; Software; Aslı Akdeniz Kudubeş; Supervision; Aslı Akdeniz Kudubeş, İlknur Bektaş, Dijle Ayar, Murat Bektaş; Validation; Aslı Akdeniz Kudubeş, Murat Bektaş; Visualization; Aslı Akdeniz Kudubeş, Murat Bektaş; Roles/Writing - original draft; Aslı Akdeniz Kudubeş, İlknur Bektaş, Dijle Ayar; Writing - review & editing Aslı Akdeniz Kudubeş, Murat Bektaş
Conflict of interests: The authors declare no conflict of interest.
Ethical approval: Ethical approval was received from the Non-Invasive Clinical Studies Ethics Committee of the University (Date: 30.01.2019, Deciison no: 2019/02–03). The researcher informed the parents about the aim of the study and obtained written consent forms from them.
Funding: No funding applied for or received.
Peer-review: Externally peer-reviewed.

REFERENCES

1. Santana S, Brach C, Harris L, Ochiai E, Blakey C, Bevington F, et al. Practice Full Report: Updating Health Literacy for Healthy People 2030: Defining Its Importance for a New Decade in Public Health. Journal of Public Health Management and Practice 2021;27(6):S258.
2. Aras Z, Bayık Temel A. Sağlık Okuryazarlığı Ölçeğinin Türkçe Formunun Geçerlilik Ve Güvenirliğinin Değerlendirilmesi (Evaluation of Validity and Reliability of the Turkish Version of Health Literacy Scale). Florence Nightingale Hemşirelik Dergisi 2017;25(2):85.
3. Barańska A, Kłak A. Recent Trends in Health Literacy Research, Health Status of the Population and Disease Prevention: An Editorial. Int J Environ Res Public Health 2022;19(14):8436.
4. Şantaş G. Türkiye'de Sağlık Okuryazarlığı Araştırmaları: Lisansüstü Tezlere Yönelik Bir İçerik Analizi. Turkish Journal of Science and Health 2021;2(2):54–60.
5. Morris NS, MacLean CD, Chew LD, Littenberg B. The Single Item Literacy Screener: Evaluation of a brief instrument to identify limited reading ability. BMC Fam Pract 2006;24:7.
6. McDonald FEJ, Patterson P, Costa DSJ, Shepherd HL. Validation of a Health Literacy Measure for Adolescents and Young Adults Diagnosed with Cancer. J Adolesc Young Adult Oncol 2016;5(1):69–75.
7. Okyay P, Abacıgil F. Türkiye sağlık okuryazarlığı ölçekleri güvenilirlik ve geçerlilik çalışması (Turkey Health Literacy Scales reliability and validity study). Anıl Reklam Matbaa Ltd. Şti.; 2016. 1–99 p.
8. Rothermel LD, Conley CC, Sarode AL, Young MF, Uscanga ZL, McIntyre M, et al. Health Literacy in Surgical Oncology Patients: An Observational Study at a Comprehensive Cancer

Center. Journal of the National Comprehensive Cancer Network 2021;19(12):1407–14.
9. Lastrucci V, Lorini C, Caini S, Bonaccorsi G, Alti E, Baglioni S, et al. Health literacy as a mediator of the relationship between socioeconomic status and health: A cross-sectional study in a population-based sample in Florence. PLoS One 2019;14(12):e0227007.
10. Çatı K, Karagöz Y, Yalman F, Öcel Y. Sağlık Okuryazarlığının Hasta Memnuniyeti Üzerine Etkisi. Ekonomik ve Sosyal Araştırmalar Dergisi 2018;14(1):67–88.
11. Morrison AK, Glick A, Shonna Yin H. Health Literacy: Implications for Child Health. Pediatr Rev 2019;40(6):263–77.
12. Abbasi-Moghaddam MA, Zarei E, Bagherzadeh R, Dargahi H, Farrokhi P. Evaluation of service quality from patients' viewpoint. BMC Health Serv Res 2019;19(1):1–7.
13. Erdfelder E, FAul F, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behav Res Methods [Internet]. 2009 [cited 2023 Jul 8];41(4):1149–60.
14. Sørensen K, Van Den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: A systematic review and integration of definitions and models. BMC Public Health 2012;12(1):80.
15. Toçi E. Health Literacy and Socioeconomic Characteristics among Older People in Transitional Kosovo. Br J Med Med Res 2013;3(4):1646–58.
16. Varni JW, Quiggins DJL, Ayala GX. Development of the pediatric hematology/oncology parent satisfaction survey. Children's Health Care 2000;29(4):243–55.
17. Kürtüncü Tanır M, Kuguoglu S. Pediatrik yaşam kalitesi envanteri (PedsQL) sağlık bakım memnuniyeti hematoloji/onkoloji modülü ebeveyn formu geçerlik-güvenirliliği (Turkish Validity and Reliability of Pediatric Quality of Life Inventory (PedsQL) Health Care Satisfaction Hematology/Onco. Ankara Sağlık Hizmetleri Dergisi 2012;11(2):013–22.
18. Papavasiliou S, Reaiche C, Papavasiliou | Shirley, Correspondence S, Papavasiliou A. Digital health and patient-centred care: A digital systems view. Syst Res Behav Sci 2021;38(2):231–45.
19. Terp K, Weis J, Lundqvist P. Parents' Views of Family-Centered Care at a Pediatric Intensive Care Unit—A Qualitative Study. Front Pediatr 2021;9:725040.
20. Tsironi S, Koulierakis G. Factors affecting parents' satisfaction with pediatric wards. Japan Journal of Nursing Science 2019;16(2):212–20.
21. Adhikari M, Paudel NR, Mishra SR, Shrestha A, Upadhyaya DP. Patient satisfaction and its socio-demographic correlates in a tertiary public hospital in Nepal: a cross-sectional study. BMC Health Serv Res 2021;21(1):1–10.
22. Meppelink CS, Smit EG, Fransen ML, Diviani N. "I was Right about Vaccination": Confirmation Bias and Health Literacy in Online Health Information Seeking 2019;24(2):129–40.
23. De Buhr E, Tannen A. Parental health literacy and health knowledge, behaviours and outcomes in children: A cross-sectional survey. BMC Public Health 2020;20(1):1–9.
24. Moon RY, Mathews A, Oden R, Carlin R. Mothers' Perceptions of the Internet and Social Media as Sources of Parenting and Health Information: Qualitative Study. J Med Internet Res 2019;21(7):e14289.