Sağlık Akademisyenleri Dergisi
http://dergipark.gov.tr/sagakaderg

Sağ Aka Derg, 2025; 12(3): 372-381

Research Article / Araştırma

Evaluation of health literacy, self-care, and quality of life of patients receiving chemotherapy*

Kemoterapi uygulanan hastalarda sağlık okuryazarlığın, öz bakımın ve yaşam kalitesinin değerlendirilmesi

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* This article is extracted from my master thesis dissertation entitled "Evaluation of health literacy, self-care, and quality of life of patients receiving chemotherapy", supervised by Assoc. Prof. Dr. Zülfünaz ÖZER (Master's Thesis, Istanbul Sabahattin Zaim University, Istanbul, Türkiye, 2024)

ABSTRACT

Aim: This study was conducted to examine the relationship between health literacy, self-care and quality of life in patients receiving chemotherapy. **Materials and Method:** This study was conducted between March and October 2023 at a training and research hospital in Istanbul. It is a descriptive, and cross-sectional study involving 103 patients receiving outpatient chemotherapy. Study data were collected through one-on-one interviews by using "Patient Information Form", "Health Literacy Scale (HLS)", "Self-Care Agency Scale (SCAS)" and "EORTC QLQ-C30 Quality of Life Scale". The data obtained in the study were evaluated in the SPSS.25 software. **Results**: The mean scores were 111.8±11.83 for HLS, 118.25±18.11 for the SCAS, 75.8±16.84 for the Functional Scale, 26.14±17.57 for the Symptom Scale, and 65.61±15.9 for the General Quality of Life. The study found that self-care capacity significantly predicts functional level (β=0.463), reduces symptom level (β =-0.383), and improves overall quality of life (β =0.434). These effects remain significant when health literacy is included, which also shows a positive impact on functional level and quality of life. **Conclusion**: It was found that the patients' health literacy levels were sufficient and very good. It was also found that the patients' self-care power was good and their quality of life was at a moderate level. It was found that Self-care agency and health literacy positively affect functional status and overall quality of life, while negatively affecting symptom levels, thereby reducing the scores. Additionally, health literacy was shown to mediate and strengthen the effects of self-care agency on all three outcomes.

ÖZ

Amaç: Bu çalışma, kemoterapi uygulanan hastalarda sağlık okuryazarlığı, öz bakımı ve yaşam kalitesi arasındaki ilişkiyi incelemek için yapıldı. **Gereç ve Yöntem:** Bu çalışma, Mart–Ekim 2023 tarihleri arasında İstanbul'daki bir eğitim ve araştırma hastanesinde yürütülmüştür. Ayaktan kemoterapi ünitesine başvuran 103 hasta ile tanımlayıcı ve kesitsel türde yapılmıştır. Çalışmanın verileri; "Hasta Bilgi Formu", "Sağlık Okuryazarlık Ölçeği (SOYÖ)", "Öz Bakım Gücü Ölçeği (ÖBGÖ)" ve "EORTC QLQ-C30 Yaşam Kalitesi Ölçeği" kullanılarak birebir görüşme yoluyla toplandı. **Bulgular**: SOYÖ puan ortalaması 111.8±11.83, ÖBGÖ 118.25±18.11, Fonksiyonel skala 75.8±16.84, Semptom skala 26.14±17.57 ve Genel Yaşam Kalitesi 65.61±15.9 olarak saptanmıştır. Yapılan analizler, bireylerin öz-bakım gücünün fonksiyonel düzey üzerinde anlamlı ve pozitif bir yordayıcı olduğunu (β =0.463), semptom düzeyini anlamlı biçimde azalttığını (β =-0.383) ve genel yaşam kalitesini anlamlı düzeyde artırdığını (β =0.434) göstermektedir. Bu ilişkiler, modele sağlık okuryazarlığı değişkeni eklendiğinde de anlamlılığını sürdürmektedir. Ayrıca, sağlık okuryazarlığı düzeyinin de fonksiyonel düzey ile yaşam kalitesi üzerinde olumlu yönde etkili olduğu belirlenmiştir. **Sonuç**: Hastaların sağlık okuryazarlığı düzeylerinin yeterli ve çok iyi olduğu, öz bakım güçlerinin iyi ve yaşam kalitelerinin orta düzeyde olduğu saptanmıştır. Öz bakım gücü ve sağlık okuryazarlığının, fonksiyonel durumu ve genel yaşam kalitesini olumlu yönde etkilediği; semptom düzeyini ise olumsuz yönde etkileyerek puanları azalttığı bulunmuştur. Ayrıca, sağlık okuryazarlığının öz bakım gücünün bu üç değişken üzerindeki etkisini aracılık ederek güçlendirdiği görülmüştür.

Key Words:
Patient, Chemotherapy, Health Literacy, Self Care Agency, Quality of Life

Anahtar Kelimeler:
Hasta, Kemoterapi, Sağlık Okuryazarlığı, Öz Bakım Gücü, Yaşam Kalitesi

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DOI:
10.52880/sagakaderg. 1670415

Received Date/Gönderme Tarihi:
05.04.2025

Accepted Date/Kabul Tarihi:
31.08.2025

Published Online/Yayımlanma Tarihi:
30.09.2025

Atıf | Reference : Toraman, P. & Özer, Z. (2025). Evaluation of health literacy, self-care, and quality of life of patients receiving chemotherapy. *Sağlık Akademisyenleri Dergisi*, 12(3), 372-381

INTRODUCTION

Cancer is an important and serious healthcare concern with high mortality rates on a global scale. One in every six deaths globally and one in every five deaths in Turkiye is caused by cancer and it is estimated that the burden of cancer will increase in the coming years with the increase in cancer risk factors as well as the increasing world population and especially the elderly population. In our present day, it is already known that 30-50% of cancers are preventable (Can, 2014; Turkiye Cancer Statistics, 2017).

Surgery, radiotherapy, chemotherapy, immunotherapy, hormonal therapy, and hematopoietic stem cell transplantation are employed as cancer treatment modalities. As a treatment method, chemotherapy uses anticancer drugs to eliminate cancer cells or stop the growth of cancerous cells (Can, 2014; Hintistan et al., 2012). Drugs prevent the reproduction and multiplication of cancerous cells and normal healthy cells (Can, 2014; Hintistan et al., 2015). Depending on the drugs taken, patients face many negative experiences such as pain, gastrointestinal problems (nausea, vomiting, etc.), fatigue, loss of appetite, and weakness, which causes patients to be negatively affected physiologically and psychologically. The symptoms created by the disease and treatment cause patients to have difficulty meeting their self-care needs and reduce their quality of life (Can, 2014).

Self-care is the activities that individuals initiate and perform to maintain their life, health, and well-being as a behavior learned through personal curiosity, education, and health experiences. Individuals who can perform self-care must be able to meet their self-care needs adequately and appropriately, take responsibility for their health, and not be dependent on others. However, those who cannot provide full or sufficient self-care must seek help (Karadağlı and Alpar, 2017).

The most common problems that cancer and chemotherapy patients face are pain and fatigue, followed by gastrointestinal problems (nausea, desire not to eat, vomiting, stomach complaints, digestive problems, diarrhea, etc.), alopecia, dyspnea, insomnia, vision loss, and headache. These problems make it difficult for cancer patients to live and negatively affect their quality of life (Dur, 2017; Gelin et al., 2015).

Health literacy is important for individuals to acquire health awareness, be aware of disease symptoms, and seek health services when necessary because of their complaints. Those who have insufficient health literacy have fewer screenings because they have less information about cancer screenings and for this reason miss the chance of early diagnosis. Also, those who have good health literacy are more likely to comply with the treatment process and continue with follow-ups after diagnosis. Each step is important for cancer patients (Tosun, 2022). With the increased health literacy, health awareness and quality of care will increase, and the budget and time allocated to health services will decrease. In this context, nurses, who are an important component of health care, and individuals who provide access to health services have more responsibilities. Nurses must fulfill these responsibilities by conducting studies, providing training, and demonstrating a more sensitive approach to patient communication (Kaya and Sivrikaya, 2019).

In our present day, cancer is increasingly recognized as a chronic condition causing socioeconomic problems, depression, and social isolation in patients. The participation of cancer patients in self-care programs leads to behavioral changes and improved health (Hasanpour-Dehkordi, 2016). Currently, the best management approach for this chronic condition is self-care, which means the participation of patients in the processes of self-observation, recognition, and labeling of symptoms and their severity, evaluation, and adoption of treatment options, and evaluation of the effectiveness of self-care (Qian and Yuan, 2012). In the study that was conducted by Shams et al. (2018), it was determined that the self-care behaviors of patients receiving chemotherapy to cope with the developing side effects increased their quality of life. Quality of life began to be taken into consideration in the field of nursing in the 1980s. Nowadays, quality of life measurements play important roles in the evaluation of the results of nursing interventions. Understanding how the quality of life of individuals receiving chemotherapy is affected is extremely important in terms of providing support to patients in this regard (Gülcivan and Topçu, 2017). This study was conducted to examine the relationship between health literacy, self-care and quality of life in patients receiving chemotherapy.

MATERIALS AND METHODS

Type of Study

The study had a descriptive, and cross-sectional design.

Place and Time of Study

The study was conducted between March and October 2023 with patients coming to the Outpatient Chemotherapy Unit of a training and research hospital in Istanbul.

Population and Sample of Study

The population of the study consisted of 600 patients who were treated in the Outpatient Chemotherapy

Unit in the hospital where the study was conducted and during the period of the study. The sample consisted of 103 individuals who met the inclusion criteria. In the power analysis performed with the GPower 3.1 program for the current sample size (n=103), the effect size was found to be 0.3 with 87% power and the margin of error as 0.05.

Inclusion criteria

- Being a volunteer to participate in the study
- Being over 18 years old
- Having received at least one course of chemotherapy
- Being competent to answer all questions

Exclusion criteria

- Not being able to speak Turkish
- Having psychiatric problems

Data Collection Tools

The data were collected using the "Patient Information Form, Health Literacy Index, Self-Care Agency Scale, and EORTC QLQ-C30 Quality of Life Scale".

Patient Information Form

The form was prepared by the researcher to describe the sociodemographic and disease-related conditions of the patients included in the study and consisted of 19 questions on the patients' gender, age, marital status, presence and number of children, education level, income level, whether the disease and treatment process affected the economic situation and whether any support was received, employment status, profession, diagnosis, duration and stage of the disease, who/whom they lived with, whether the disease affected the care process, whether they received support during the care process, how they perceived their health, whether they followed health information sources, and where they obtained health-related information.

Health Literacy Scale (HLS)

The first version of the Health Literacy Index "Health Literacy Survey in Europe-HLS-E" was developed by U Sorensen et al. In 2013, Toçi, Bruzari, and Sorenson revised it as "Health Literacy Scale (HLS)" (Sorensen et al., 2013; Toçi et al., 2013). The Turkish validity and reliability study of the scale was conducted by Aras and Temel in 2017. HLS is used to evaluate health literacy and has 25 items, 4 sub-dimensions (Access to Information min 5-max 25 score, Understanding Information min 7-max 35 score, Evaluation min 8-max 40 score, Application/Use min 5-max 25 score), and a 5-point Likert design (5- I have no difficulty, 1- I cannot do it/I have no ability/it is impossible). The lowest score for the entire scale is 25 and the highest score is 125. The scale hasn't cut-off point. Low scores indicate that the level of health literacy is insufficient, problematic, and weak while increasing scores indicate that it is sufficient and very good. As the score increases, the person's health literacy level increases (Aras and Temel, 2017). In the study that was conducted on the validity and reliability of the Turkish form, Cronbach's Alpha coefficient for HLS was found to be 0.92. In the present study, the Cronbach's Alpha Coefficient of the scale was 0.88.

Self-Care Agency Scale

Self-Care Agency Scale (SCAS) is used to measure a person's self-care or self-care power. In 1979, Kearney and Fleischer developed the original 43-item scale in English, and in this study, the 35-item shortened form adapted into Turkish by Nahcivan (1993) was used. SCAS focuses on individuals' self-care abilities and their evaluations. Each statement is scored from 0 to 4 scores. Individuals' tendencies towards self-care are determined by the participants' opinions on a 5-point scale. From the options, 0 scores are given to the answer "Does not describe me at all", 1 point to "Does not describe me very much", 2 scores to "I have no idea ", 3 scores to "Describes me a little" and 4 scores to "Describes me a lot". In the scale adapted to Turkish, 8 items (items 3, 6, 9, 13, 19, 22, 26, and 31) are evaluated as negative and the scoring is reversed. Minimum and maximum values are 0-140. The high score obtained from the scale indicates the high level of the individual's self-care or self-care ability and strength. The Cronbach alpha value of the scale was found to be 0.92 (Nahcivan, 1993). In the present study, SCAS Cronbach's Alpha Coefficient was 0.91.

The European Organization for Study and Treatment of Cancer, 30-Item Core Quality of Life Questionnaire (EORTC QLQ-C30)

EORTC QLQ-C30 version 3.0 was developed by the European Organization for Study and Treatment of Cancer and its Turkish validity and reliability study was conducted by Beşer and Öz in 2003. EORTC-QLQ-C30 consists of 3 subscales ("Functional Scale, Symptom Scale, and General Quality of Life") and 30 questions. The functional scale includes physical, role, cognitive, emotional, and social functions. The symptom scale evaluates fatigue, pain, nausea, and vomiting. Dyspnea, insomnia, anorexia, constipation, diarrhea, and financial difficulties are also evaluated with one question each. The first 28 of the 30 items of the scale are 4-point Likert scales, ranging from 1 (not at all) to 4 (very much). In the 29th question of the scale, patients are asked to rate their health status (1: very poor, 7: excellent), and in the 30th question, patients are asked to rate their general quality of life. Questions 29 and 30 constitute the General Quality of Life domain. The scores of the items in each subscale are summed, and this total is divided by the number of items in that subscale to calculate the average raw score. The obtained raw score is then converted into a score ranging from 0 to 100 according to the EORTC guidelines. A high "Functional Scale and General Quality of Life" score and a low "Symptom Scale" score of the patients also indicate a high quality of life (Beşer, 2003; Çalışkan et al., 2015). The Cronbach alpha value of the scale was found to be 0.90 (Beşer, 2003). In the present study, the Cronbach alpha value of the scale was found to be 0.87 for Functional Scale, 0.85 for Symptom Scale and 0.82 for General Quality of Life.

Evaluation of Data

The data obtained in the study were evaluated in a computer environment with the SPSS.25 software and the SPSS PROCESS macro program (4 Models). In evaluating the variables of the data, descriptive statistical methods (Mean, Standard Deviation, Median, Frequency, Ratio, Minimum, Maximum) and the distribution of the data were evaluated with the Shapiro-Wilk Test. Spearman's correlation and regression analyses were performed. Structural equation modeling was used to determine the mediator variable in the factors affecting the dependent variable. Significance was evaluated p<0.05 levels.

Ethical Dimension of the Study

To conduct the study, approval was obtained from the İstanbul Sabahattin Zaim University Ethics Committee (18.11.2022, 2022/24). Institutional permission was obtained from the Istanbul Provincial Health Directorate (03/03/2023, 2023/03) regarding the study from the relevant hospital. Each individual included in the sample was informed about the purpose of the study before the study and written permission was obtained with an informed consent form. Patients who were willing to participate in the study were included in the study and the confidentiality of their data was ensured.

RESULTS

The mean age of the patients was found to be 62.74±7.63 (years), the mean diagnosis period was 614.97±836.22 days, 82.5% were male, 81.6% were married, 93.2% had children, 51.5% were primary school graduates, 61.2% had income equal to expenses, 47.6% had economic difficulties because of disease and treatment, 23.3% received economic support, 11.7% were employed, 39.8% had stage 4 disease, 46.6% lived with their spouse and children, 46.6% stated that the disease affected their care, 29.1% stated that their spouse was the person who helped them during the disease process, 85.4% evaluated their health well, 61.2% followed health information sources regularly, and 89.2% stated that they received information from physicians. (Table 1).

The mean scores of the participants in the HLS, SCAS, and EORTC QLQ-C30 scales are given in Table 2. The mean scores of the subscales of the HLS were 22.48 ± 3.63 for "Access to Information," 28.34 ± 5.49 for "Understanding Information," 36.92 ± 4.16 for

Table 1. Results regarding patients' sociodemographic, disease characteristics and processes

	Mean±SD	Min-Max (Median)
Age	**62.74±7.63**	**43-80 (63)**
Diagnosis Duration (Days)	614.97±836.22	7-5040 (300)
	n	**%**
Sex		
Female	18	17.5
Male	85	82.5
Marital Status		
Married	84	81.6
Single	19	18.4
Childbearing Status		
Yes	96	93.2
No	7	6.8
Childbearing Status		
1 Child	13	13.5
2 Children	27	28.1
3 Children	29	30.2
4 Children and above	27	28.1

*Relative, Friend

Table 1 (Devam). Results regarding patients' sociodemographic, disease characteristics and processes

	Mean±SD	Min-Max (Median)
Educational Status		
Illiterate	7	6.8
Literate	9	8.7
Primary education	53	51.5
Secondary Education	11	10.7
High school	19	18.4
Higher Education and Above	4	3.9
Income Status		
Income is More Than Expense	7	6.8
Income Equals Expense	63	61.2
Income Less Than Expense	33	32.0
Economic Difficulty of the Disease and Treatment		
Yes	49	47.6
No	54	52.4
Receiving Economic Support		
Yes	24	23.3
No	79	76.7
Working Status		
Yes	12	11.7
No	91	88.3
Disease Stage		
Stage 1	9	8.7
Stage 2	17	16.5
Stage3	36	35.0
Stage4	41	39.8
People Living in the House		
Only	10	9.7
Spouse	32	31.1
Spouse and Children	48	46.6
Other*	13	12.6
Whether the Disease Affects Care		
Yes	48	46.6
No	55	53.4
People Who Help During the Disease Process		
Nobody	24	23.3
Spouse	30	29.1
Children	15	14.6
Spouse and Children	29	28.2
Mother, Father and Siblings	5	4.8
Health Perception Status		
Good	88	85.4
Bad	15	14.6
Status of Regularly Following Health Information Sources		
Yes	63	61.2
No	40	38.8
Health Information Resources		
Family	32	31.4
Television	10	9.8
Friend	1	1.0
Internet	39	38.2
Physician	91	89.2
Book-Brochure-Magazine	2	2.0
Nurse	22	21.6

*Relative, Friend

"Evaluation" and 24.06 ± 1.46 for "Application/Usage". The overall mean score of the HLS was 111.8 ± 11.83. The SCAS mean score was 118.25±18.11, the "Functional Scale" mean score was 75.8±16.84, the "Symptom Scale" mean score was 26.14±17.57, and the "General Quality of Life" mean score was 65.61±15.9 (Table 2).

There is a statistically significant positive correlation between the HLS and SCAS ($r = 0.461$, $p < 0.01$), the Functional Scale ($r = 0.342$, $p < 0.01$), and the Global Quality of Life ($r = 0.307$, $p < 0.01$). Additionally, there is a statistically significant negative correlation between the HLS and the Symptom Scale ($r = -0.296$, $p < 0.01$) (Table 3).

According to the analysis results, both self-care agency ($\beta = 0.463$) and health literacy ($\beta = 0.283$) positively influence functional scale. Another finding indicates that health literacy plays a mediating role in the relationship between self-care agency and functional scale ($\beta = 0.117$), and it strengthens the positive effect on functional scale ($\beta = 0.580$). The predictive power of these two variables in explaining quality of life was found to be 47.4% (Table 4).

According to the analysis results, both self-care agency ($\beta = -0.383$) and health literacy ($\beta = -0.216$) have a negative effect on the symptom scale. Another finding indicates that health literacy plays a mediating role in the

Table 2. Findings related to the health literacy scale, self-care capacity scale, and quality of life scale

	Mean±SD	Min-Max Score (Median)	Min-Max Scores to be Obtained
Health Literacy Scale Sub-dimensions			
Access to Information	22.48±3.63	9-25 (24)	5-25
Understanding Information	28.34±5.49	14-35 (30)	7-35
Evaluation	36.92±4.16	24-40 (39)	8-40
Application/Usage	24.06±1.46	18-25 (25)	5-25
Health Literacy Scale	111.8±11.83	71-125 (114)	25-125
Self-Care Agency Scale	118.25±18.11	50-139 (24)	0-140
Functional Scale	75.8±16.84	8.89-100 (80)	0-100
Symptom Scale	26.14±17.57	0-84.62 (23.08)	0-100
General Quality of Life	65.61±15.9	16.67-100 (66.67)	0-100

Descriptive statistical

Tablo 3. Correlation analysis of the subscales of the health literacy scale, self-care agency scale, and quality of life scale

		1	2	3	4	5
1. Health Literacy Scale	r	1				
	p	.				
2. Self-Care Agency Scale	r	.461*	1			
	p	.000	.			
3. Functional Scale	r	.342*	.440*	1		
	p	.000	.000	.		
4. Symptom Scale	r	-.296*	-.411*	-.710*	1	
	p	.002	.000	.000	.	
5. Global Quality of Life	r	.307*	.381*	.409*	-.458*	1
	p	.002	.000	.000	.000	.

Table 4. Direct and ındirect effects of self-care ability, health literacy and functional scale

				95% CI			
Direct Effect	**β**	**S.E.**	**t**	**Lower**	**Upper**	**p**	**R²**
Self-Care Agency Scale→Functional Scale	0.463	0.180	2.570	0.110	0.816	0.001*	
Health Literacy Scale→Functional Scale	0.283	0.226	2.250	0.159	0.725	0.001*	
Self-Care Agency Scale→Health Literacy Scale	0.415	0.071	5.850	0.275	0.555	0.001*	0.172
Indirect Effect							
Self-Care Agency Scale → Health Literacy Scale → Functional Scale	0.117	0.043	2.721	0.032	0.202	0.001*	
Total Effect							
Self-Care Agency Scale→Functional Scale	0.580	0.189	3.069	0.205	0.955	0.001*	0.474

The SPSS PROCESS macro 4 Model, *p<0.05

relationship between self-care agency and the symptom scale (β = -0.09), and it strengthens the effect of health literacy on the symptom scale (β =-0.473). The predictive power of these two variables in explaining the symptom scale was found to be 38.8% (Table 5).

According to the analysis results, both self-care agency (β = 0.434) and health literacy (β = 0.316) positively influence quality of life. Another finding indicates that health literacy plays a mediating role in the relationship between self-care agency and quality of life (β = 0.131), and it strengthens the positive effect on quality of life (β = 0.565). The predictive power of these two variables in explaining quality of life was found to be 45.9% (Table 6).

DISCUSSION

The results of the present study, which evaluated the relationship between health literacy, self-care, and quality of life in patients undergoing chemotherapy, were discussed within the context of the relevant literature data.

It was found that the patients' health literacy levels were sufficient and very. In a previous study that was conducted by Okyay and Abacıgil, it was reported that 13.1% of the participants' health literacy level was insufficient, 39.6% was problematic, 32.9% was sufficient, and 14.5% was at a high level. In different studies, health literacy levels of cancer patients were

Table 5. Self-care agency scale, health literacy ındex, symptom scale direct and ındirect effects

				95% CI			
Direct Effect	**β**	**S.E.**	**t**	**Lower**	**Upper**	**p**	**R²**
Self-Care Agency Scale→ Symptom Scale	-0.383	0.085	-4.510	-0.550	-0.216	0.001*	
Health Literacy Scale→ Symptom Scale	-0.216	0.078	-2.770	-0.369	-0.063	0.001*	
Self-Care Agency Scale→Health Literacy Scale	0.415	0.071	5.850	0.275	0.555	0.001*	0.172
Indirect Effect							
Self-Care Agency Scale → Health Literacy Scale → Symptom Scale	-0.09	0.023	-3.913	-0.136	-0.044	0.001*	
Total Effect							
Self-Care Agency Scale→ Symptom Scale	-0.473	0.084	-5.631	-0.640	-0.306	0.001*	0.388

The SPSS PROCESS macro 4 Model, *p<0.05

Table 6. Self-care agency scale, health literacy ındex, and general quality of life direct and ındirect effects

				95% CI			
Direct Effect	**β**	**S.E.**	**t**	**Lower**	**Upper**	**p**	**R²**
Self-Care Agency Scale→ Symptom Scale	0.434	0.147	2.950	0.165	0.703	0.001*	
Health Literacy Scale→ Symptom Scale	0.316	0.172	2.840	0.022	0.654	0.001*	
Self-Care Agency Scale→Health Literacy Scale	0.415	0.071	5.850	0.275	0.555	0.001*	0.172
Indirect Effect							
Self-Care Agency Scale → Health Literacy Scale → Symptom Scale	0.131	0.045	2.911	0.042	0.220	0.001*	
Total Effect							
Self-Care Agency Scale→ Symptom Scale	0.565	0.148	3.818	0.271	0.859	0.001*	0.459

The SPSS PROCESS macro 4 Model, *p<0.05

found to be high (sufficient and very good) (Bol et al., 2018; Smith et al., 2020; Türkoğlu et al., 2018). Head and neck cancer patients with insufficient health literacy were reported to have significantly lower behavioral levels in the areas of health-oriented behavior, positive and active participation in life, self-monitoring and insight, constructive attitudes and approaches, and skills and technical acquisition (Papadakos et al., 2022). Health literacy is the ability of individuals to use and understand healthcare information and services available to them to make decisions about their health. It is also a key element for adults (aged 18-44) to make informed decisions about cancer. Low health literacy is one of the social determinants of health in cancer-related inequalities (Simmons et al., 2017).

The study found that patients' self-care was above the average level. In the study that was conducted by Bae et al. (2017), the self-care of oncology patients with lymphedema was found to be above average (Bae et al., 2017). It was reported in other studies that patients' self-care was good (Gouderzian et al., 2019; Küçükkaya and Erçel, 2019). Self-care is the link between knowledge and action and is associated with beliefs about the ability to perform certain behaviors. After chemotherapy, cancer patients face many problems that might negatively affect their self-care (Masmooi et al., 2022).

The quality of life of the patients was found to be at a moderate level. The quality of life of the patients included in the study that was conducted by Çalışkan et al. (2015) and Sayilan and Doğan (2020) was also found to be at a moderate level. As in our study, in the studies conducted by Randa et al. (2019) and Kutlutürkan et al. (2019), it was reported that the quality of life was high in the sub-dimensions of functional status.

Self-care and health literacy affect functional status and general quality of life positively playing mediating roles in increasing the effect of self-care agency on functional status and general quality of life and strengthening this positive effect. Also, self-care and health literacy negatively affect the level of symptoms. Health literacy plays mediating roles in the effect of self-care on experienced symptoms and further reduces the effect of experienced symptoms. A previous study reported that functional health literacy is only a predictor of disease-related quality of life and self-care behaviors have the greatest effect (Lee, 2018). Another study also reported that if the healthcare literacy of patients diagnosed with breast cancer increases, their self-care will also increase. For this reason, improving health literacy will contribute to increasing self-care skills in breast cancer patients and thus improving the quality of life of these patients. Healthcare literacy must be one of the basic strategies in facilitating the management and leadership of this disease by healthcare personnel and also increasing the quality of life of healthcare professionals (Ahmadzadeh et al., 2021). In a study that was conducted by Shams et al. (2018), it was reported that the self-care behaviors of patients receiving chemotherapy to cope with the developing side effects increased their quality of life. In another study that was conducted by Altınparmak et al. (2011), a positive relationship was detected between self-care agency and quality of life functions (physical, role, social). Lower health literacy is associated with greater difficulties in understanding and processing cancer-related information, lower quality of life, and worse care experience (Holden et al., 2021). The results of the study show that patients with inadequate health literacy have lower quality of life concerning their functional health status and cancer-specific symptoms (Papadakos et al., 2022). Halverson et al. (2015) reported that cancer patients who had low health literacy might face difficulty navigating complex and fragmented healthcare systems and have difficulty managing treatment plans, potentially leading to delays in treating side effects and suboptimal symptom management, all of which might deteriorate treatment-related symptoms and consequently lead to poorer quality of life (Halverson et al., 2015).

CONCLUSION AND RECOMMENDATIONS

It was found that the patients' health literacy levels were sufficient and very good. It was also found that the patients' self-care power was good and their quality of life was at a moderate level. Self-care power and health literacy positively effect functional status and general quality of life. Health literacy plays mediating roles in increasing the effect of self-care power on functional status and general quality of life and strengthens this positive effect. Also, self-care power and health literacy negatively effect the symptoms faced. Health literacy also plays mediating roles in the effect of self-care power on the symptoms experienced and strengthens the negative effect.

Based on these results, it is recommended that patients' levels of health literacy, self-care, and quality of life be regularly assessed. Develop comprehensive educational programs aimed at improving health literacy. To enhance patients' active participation in care processes, strengthen their decision-making skills, and improve their quality of life, structured training programs focusing on health literacy should be integrated into healthcare settings. Implement personalized interventions to strengthen self-care power. Prioritize health literacy and self-care education in symptom management strategies. The study be repeated with a larger population in a different region.

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