

Research Article

Healthy Lifestyle Behaviors and Health Literacy in Oncology Patients: Evaluation of Organic Food Consumption and Physical Activity

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Abstract

Objectives: Health literacy is a critical determinant of health outcomes in cancer patients, yet its relationship with healthy lifestyle behaviors remains understudied. This study examined the association between health literacy and lifestyle behaviors, particularly organic food consumption and physical activity, in oncology patients.

Methods: A cross-sectional study was conducted at a university hospital's Medical Oncology Clinic between January and September 2025 with 267 cancer patients receiving active treatment. Data were collected using a questionnaire assessing sociodemographic characteristics, healthy lifestyle behaviors, and the Turkish Health Literacy Scale-32 (TSOY-32). Statistical analyses included Chi-square and Fisher's exact tests ($p < 0.05$).

Results: Limited health literacy was prevalent, with 68.6% classified as inadequate or problematic-limited. Significant associations were found between health literacy and organic food consumption ($p = 0.029$) and prescription medication research ($p = 0.031$). Regular exercise approached significance ($p = 0.070$). Patients with excellent health literacy showed higher rates of organic food purchasing (42.9% vs. 21.3%) and regular exercise (23.1% vs. 3.9%) compared to those with inadequate health literacy.

Conclusion: Limited health literacy is associated with lower rates of healthy lifestyle behaviors in oncology patients. Health literacy-targeted interventions may improve adherence to lifestyle recommendations, potentially contributing to better treatment outcomes and quality of life.

Keywords: Cancer patients, health literacy, healthy lifestyle behaviors, oncology, organic food, physical activity

Cite This Article: Çelebi A, Bircan NA, Güren AK, Ağyol Y, Kocaaslan E, Erel P, et al. Healthy Lifestyle Behaviors and Health Literacy in Oncology Patients: Evaluation of Organic Food Consumption and Physical Activity. EJMI 2026;10(3):303–311.

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Submitted Date: April 2, 2026 **Accepted Date:** August 3, 2026

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Cancer remains one of the leading causes of morbidity and mortality worldwide, with an estimated 19.3 million new cases and 10 million cancer-related deaths reported globally in 2020.^[1] While advances in early detection and treatment have improved survival rates, cancer patients face numerous challenges throughout their treatment journey, including managing side effects, maintaining quality of life, and adopting healthy lifestyle behaviors that may influence treatment outcomes.^[2] In this context, health literacy—defined as the capacity to obtain, understand, evaluate, and apply health-related information in making informed health decisions—emerges as a critical determinant of patient outcomes.^[3]

The concept of health literacy encompasses multiple dimensions, including accessing health information, understanding medical terminology and instructions, appraising the quality and relevance of information, and applying this knowledge to health-related decisions.^[4] In oncology settings, where patients must navigate complex treatment protocols, manage multiple medications, and make informed decisions about their care, adequate health literacy becomes particularly crucial.^[5] Research has consistently demonstrated that cancer patients with limited health literacy experience poorer treatment adherence, increased hospitalization rates, and reduced quality of life compared to those with adequate literacy.^[6,7]

Healthy lifestyle behaviors, including balanced nutrition, regular physical activity, and avoidance of harmful substances, play a significant role in cancer prevention, treatment tolerance, and survivorship.^[8,9] The World Cancer Research Fund and American Institute for Cancer Research recommend that cancer survivors follow similar lifestyle guidelines to those for cancer prevention, emphasizing the importance of maintaining a healthy weight, engaging in regular physical activity, and consuming a plant-based diet rich in fruits, vegetables, and whole grains.^[10] Organic food consumption has gained increasing attention as a component of healthy eating, with some studies suggesting potential benefits related to reduced pesticide exposure and higher nutrient content.^[11,12]

Physical activity has been extensively studied in the context of cancer care, with evidence supporting its benefits for reducing cancer-related fatigue, improving physical function, enhancing quality of life, and potentially improving survival outcomes in certain cancer types.^[13,14] Current guidelines recommend that cancer patients engage in at least 150 minutes of moderate-intensity aerobic activity per week, along with muscle-strengthening exercises.^[15] Despite these recommendations, adherence to physical activity guidelines among cancer patients remains sub-

optimal, with various barriers including treatment-related side effects, fatigue, and lack of knowledge about exercise safety.^[16,17]

The relationship between health literacy and healthy lifestyle behaviors in cancer patients represents an important but understudied area. While previous research has examined health literacy's impact on treatment adherence and health outcomes, fewer studies have specifically investigated how health literacy influences lifestyle choices such as dietary patterns and physical activity engagement.^[18] Understanding this relationship is essential for developing effective interventions that promote healthy behaviors in oncology populations, particularly those with limited health literacy who may face additional challenges in accessing and implementing lifestyle recommendations.^[19,20]

Türkiye, like many countries, faces increasing cancer incidence rates, with an estimated 233,834 new cancer cases reported in 2020.^[21] Turkish cancer patients navigate a healthcare system where health literacy disparities are prevalent, with studies indicating that a significant proportion of the general population demonstrates limited health literacy.^[22,23] These disparities may influence patients' ability to understand and follow lifestyle recommendations provided by healthcare professionals, potentially affecting their overall health outcomes and quality of life during cancer treatment.

Given the importance of healthy lifestyle behaviors in cancer care and the potential moderating role of health literacy, this study aimed to examine the relationship between health literacy levels and healthy lifestyle behaviors among oncology patients receiving active treatment. Specifically, we investigated the associations between health literacy and: (1) organic food consumption patterns, (2) physical activity engagement, (3) dietary behaviors including attention to balanced nutrition and avoidance of food additives, and (4) medication research behaviors. We hypothesized that patients with higher health literacy levels would demonstrate greater engagement in healthy lifestyle behaviors compared to those with limited health literacy.

Methods

Study Design and Setting

This cross-sectional study was conducted at the Medical Oncology Outpatient Clinic of Marmara University Hospital in Turkey between January and September 2025. The study employed a descriptive-correlational design to examine the relationship between health literacy levels and healthy lifestyle behaviors among cancer patients receiving active antineoplastic treatment.

Participants

The study population consisted of cancer patients receiving antineoplastic treatment (chemotherapy, immunotherapy, targeted oral therapies, or hormonal therapy) and/or supportive care at the oncology clinic. Inclusion criteria were: (1) age 18 years or older, (2) histologically confirmed cancer diagnosis, (3) currently receiving active cancer treatment, and (4) ability to read and understand Turkish. Exclusion criteria included: (1) severe cognitive impairment that would preclude questionnaire completion, (2) Eastern Cooperative Oncology Group (ECOG) performance status of 4, (3) inability to communicate due to language barriers, and (4) unwillingness to participate. A convenience sampling method was employed, and a total of 267 patients who met the inclusion criteria and provided informed consent were enrolled in the study.

Data Collection Tools

Data were collected using a comprehensive questionnaire consisting of two components:

Sociodemographic and Lifestyle Questionnaire: A researcher-developed questionnaire assessed sociodemographic characteristics (age, gender, marital status, education level, monthly family income, place of residence, living arrangements) and healthy lifestyle behaviors. Lifestyle behavior items included questions about: (1) dietary habits and dieting for health purposes, (2) avoidance of food additives and preservatives, (3) organic food consumption patterns, (4) attention to balanced and adequate nutrition, (5) regular exercise engagement, (6) consumption of foods with poor taste or appearance for health benefits, (7) prescription medication research behaviors, and (8) presence of comorbidities requiring medication. Response options for lifestyle behaviors utilized a 5-point Likert scale (Always, Often, Sometimes, Rarely, Never). Home health services utilization was assessed by asking participants whether they currently receive medical services at home ("evde sağlık hizmeti"), which included blood draws, medication administration, wound care, and medical examinations by healthcare professionals.

Turkish Health Literacy Scale-32 (TSOY-32): Health literacy was assessed using the validated TSOY-32, developed by the Department of Public Health at Hacettepe University in collaboration with the Turkish Ministry of Health General Directorate of Health Promotion.^[24] This 32-item instrument measures health literacy across four dimensions: accessing health information, understanding health information, appraising health information, and applying health information. Responses are scored on a 5-point scale, with total scores categorized into four levels: inadequate (0–25 points), problematic-limited (> 25–33 points), sufficient (>

33–42 points), and excellent (> 42–50 points). The scale has demonstrated good psychometric properties and has been validated for the Turkish population.^[24]

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 25.0. Descriptive statistics were calculated for all variables, with categorical variables presented as frequencies and percentages, and continuous variables as means $\pm$ standard deviations. Pearson's chi-square test was used for analyzing associations between categorical variables, with Fisher's exact test employed when expected cell counts were less than 5. Statistical significance was defined as $p < 0.05$.

Ethics Approval and Consent to Participate

The study protocol was approved by the Marmara University Clinical Research Ethics Committee (Approval Date: February 17, 2025; Approval Code: 09.2024.991) and conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants prior to data collection. To ensure confidentiality, no personally identifiable information was collected, and all data were stored securely with access restricted to the research team.

Artificial intelligence–assisted tools were not used for data analysis, interpretation, or generation of scientific content.

Results

Sociodemographic and Clinical Characteristics

A total of 267 cancer patients were included in this study. The sociodemographic and clinical characteristics of the participants are presented in Table 1. The mean age of participants was 53.01 ± 13.60 years. The majority of participants were female (64.8%, $n=173$) and married (80.8%, $n=211$), while 11.9% ($n=31$) were single and 7.3% ($n=19$) were divorced. Most participants lived with family members (90.6%, $n=241$), with only 9.4% ($n=25$) living alone. The majority of participants (87.1%, $n=222$) received home health services, which included medical services provided at home such as blood draws, medication administration, and medical examinations by healthcare professionals.

Regarding educational background, the largest proportion of participants had a primary school education (42.3%, $n=113$), followed by high school (22.5%, $n=60$), university and above (19.5%, $n=52$), middle school (10.1%, $n=27$), and no formal education (5.6%, $n=15$). Monthly family income was reported as moderate by the majority (68.9%, $n=184$), while 13.5% ($n=36$) reported good income and 17.6% ($n=47$) reported poor income. Most participants (77.4%,

Table 1. Sociodemographic and clinical characteristics of the study population (n=267)

Variables	n	%
Age, Mean±SD	53.01±13.60	
Gender		
Male	94	35.2
Female	173	64.8
Marital Status		
Married	211	80.8
Single	31	11.9
Divorced	19	7.3
Living alone?		
Yes	25	9.4
No	241	90.6
Do you need help with your daily needs?		
Never	191	71.5
Rarely	36	13.5
Often	34	12.7
Completely	6	2.2
Are there any comorbidities that require you to take medication?		
Yes	131	49.4
No	134	50.6
Where did you live the longest?		
Village - town	15	5.6
District - province	45	16.9
Metropolitan	206	77.4
Education Level		
No formal education	15	5.6
Primary school	113	42.3
Middle school	27	10.1
High school	60	22.5
University and above	52	19.5
Monthly Family Income		
Good	36	13.5
Moderate	184	68.9
Poor	47	17.6

n=206) had lived the longest period of their lives in metropolitan areas, while 16.9% (n=45) lived in districts or provinces, and 5.6% (n=15) lived in villages or towns.

In terms of functional status, 71.5% (n=191) of participants reported no need for assistance with daily activities, while 13.5% (n=36) rarely needed help, 12.7% (n=34) frequently needed help, and 2.2% (n=6) were completely dependent

on assistance. Nearly half of the participants (49.4%, n=131) had comorbidities requiring medication use.

Health Literacy Distribution

Analysis of health literacy levels revealed that only 31.5% of participants (n=84) demonstrated adequate or excellent competency. The distribution across categories was as follows: inadequate (31.5%, n=84), problematic-limited (37.1%, n=99), sufficient (20.6%, n=55), and excellent (10.9%, n=29). Notably, when the two lower categories were aggregated, 68.6% of the study population exhibited limited health literacy. This finding suggests that the majority of cancer patients in our cohort (approximately seven out of every ten) faced substantial barriers in accessing, understanding, appraising, or effectively utilizing health information.

Healthy Lifestyle Behaviors

The healthy lifestyle behaviors of participants are presented in Table 1 (continued). Regarding organic food consumption, 21.7% (n=55) of participants reported always purchasing organic agricultural products, 23.3% (n=59) frequently, 33.2% (n=84) sometimes, 15.4% (n=39) rarely, and 6.3% (n=16) never. For physical activity, only 8.7% (n=22) reported always engaging in regular exercise for health purposes, while 23.7% (n=60) never exercised regularly. More than half of the participants (51.2%, n=132) reported always researching their prescribed medications, indicating active engagement in medication-related health behaviors.

Regarding avoidance of food additives and preservatives, 39.3% (n=97) reported always avoiding these substances, while only 4.9% (n=12) reported never avoiding them. For balanced and adequate nutrition, 28.5% (n=72) of participants reported always paying attention, 32.8% (n=83) frequently, and 26.9% (n=68) sometimes. Interestingly, 21.5% (n=55) of participants reported always consuming foods with poor taste or appearance if they believed these were beneficial for their health, suggesting that a subset of patients prioritized health benefits over palatability.

Association Between Health Literacy and Healthy Lifestyle Behaviors

The associations between health literacy levels and healthy lifestyle behaviors are presented in Table 2. Several significant associations were identified between health literacy and specific lifestyle behaviors.

Organic Food Consumption: A statistically significant association was found between health literacy levels and organic food consumption ($p=0.029$). Among patients with excellent health literacy, 42.9% (n=12) reported always purchasing organic agricultural products, compared to

Table 2. Association between health literacy levels and healthy lifestyle behaviors

Variables	Inadequate n=84 (%)	Problematic-limited n=99 (%)	Sufficient n=55 (%)	Excellent n=29 (%)	p
Organic food consumption					0.029¹
Always	17 (21.3)	15 (16.1)	11 (21.2)	12 (42.9)	
Often	14 (17.5)	29 (31.2)	12 (23.1)	4 (14.3)	
Sometimes	26 (32.5)	27 (29.0)	23 (44.2)	8 (28.6)	
Rarely	17 (21.3)	17 (18.3)	2 (3.8)	3 (10.7)	
Never	6 (7.5)	5 (5.4)	4 (7.7)	1 (3.6)	
Regular exercise					0.070 ¹
Always	3 (3.9)	5 (5.2)	8 (15.1)	6 (23.1)	
Often	8 (10.4)	6 (6.2)	4 (7.5)	2 (7.7)	
Sometimes	19 (24.7)	34 (35.1)	18 (34.0)	8 (30.8)	
Rarely	23 (29.9)	32 (33.0)	11 (20.8)	6 (23.1)	
Never	24 (31.2)	20 (20.6)	12 (22.6)	4 (15.4)	
Research prescribed medications					0.031²
Always	40 (50.0)	46 (47.9)	24 (44.4)	22 (78.6)	
Often	15 (18.8)	35 (36.5)	15 (27.8)	4 (14.3)	
Sometimes	15 (18.8)	8 (8.3)	9 (16.7)	1 (3.6)	
Rarely	7 (8.8)	4 (4.2)	3 (5.6)	1 (3.6)	
Never	3 (3.8)	3 (3.1)	3 (5.6)	0 (0)	
Balanced nutrition attention					0.097 ²
Always	24 (30.8)	20 (21.1)	16 (30.2)	12 (44.4)	
Often	17 (21.8)	37 (38.9)	20 (37.7)	9 (33.3)	
Sometimes	29 (37.2)	22 (23.2)	12 (22.6)	5 (18.5)	
Rarely	7 (9.0)	12 (12.6)	4 (7.5)	1 (3.7)	
Never	1 (1.3)	4 (4.2)	1 (1.9)	0 (0)	
Comorbidity requiring medication					0.083 ¹
Yes	45 (53.6)	52 (53.1)	26 (48.1)	8 (27.6)	
No	39 (46.4)	46 (46.9)	28 (51.9)	21 (72.4)	
Self-rated health status					0.328 ²
Good/Very good	34 (40.5)	46 (46.4)	27 (49.1)	19 (65.5)	

¹Pearson Chi-Square test; ²Fisher's Exact test; p<0.05 was considered statistically significant

21.3% (n=17) in the inadequate group, 16.1% (n=15) in the problematic-limited group, and 21.2% (n=11) in the sufficient group. Conversely, the proportion reporting never purchasing organic products was lowest in the excellent group (3.6%, n=1) and highest in the inadequate group (7.5%, n=6).

Prescription Medication Research: A significant relationship was found between health literacy levels and frequency of researching prescribed medications (p=0.031). Participants with excellent health literacy demonstrated the highest rate of always researching their medications (78.6%, n=22) compared to those with inadequate (50.0%,

n=40), problematic-limited (47.9%, n=46), and sufficient (44.4%, n=24) health literacy. Notably, no participants with excellent health literacy reported never researching their prescribed medications, whereas this behavior was observed in 3.8%, 3.1%, and 5.6% of the inadequate, problematic-limited, and sufficient groups, respectively.

Regular Exercise: A marginally significant association was observed between health literacy levels and regular exercise engagement (p=0.070). The proportion of patients who always engaged in regular exercise was highest among those with excellent health literacy (23.1%, n=6), followed by sufficient (15.1%, n=8), problematic-limited (5.2%, n=5),

and inadequate (3.9%, $n=3$) health literacy. Conversely, the percentage of participants who never exercised regularly was lowest in the excellent group (15.4%, $n=4$) and highest in the inadequate group (31.2%, $n=24$). This gradient pattern suggests a positive relationship between health literacy and physical activity engagement, although the association did not reach conventional statistical significance.

Other Lifestyle Behaviors: Although not reaching statistical significance, several other lifestyle behaviors showed trends suggesting potential associations with health literacy. Attention to balanced and adequate nutrition showed a near-significant trend ($p=0.097$), with 44.4% ($n=12$) of patients with excellent health literacy always paying attention compared to 30.8% ($n=24$) in the inadequate group. The consumption of foods with poor taste or appearance for health benefits also showed a non-significant trend ($p=0.115$), with patients with excellent health literacy more frequently reporting this behavior. Avoidance of food additives and preservatives did not differ significantly across health literacy groups ($p=0.259$), nor did dieting behaviors for health maintenance ($p=0.318$).

Comorbidity and Health Literacy: The observed association between health literacy and comorbidity prevalence ($p=0.083$), though marginally significant, reveals a notable pattern. Patients with excellent health literacy had half the comorbidity rate (27.6%) compared to those with inadequate health literacy (53.6%). This relationship may be bidirectional: higher health literacy may enable better health management and disease prevention, while the absence of chronic conditions may facilitate the development and maintenance of health literacy skills. Alternatively, both health literacy and comorbidity status may be influenced by shared socioeconomic and educational factors.

Discussion

This study provides important insights into the relationship between health literacy and healthy lifestyle behaviors among oncology patients receiving active treatment. Our findings demonstrate that limited health literacy is highly prevalent among cancer patients, with 68.6% of participants classified as having inadequate or problematic-limited health literacy. Furthermore, we identified significant associations between health literacy levels and several healthy lifestyle behaviors, including organic food consumption and medication research behaviors, with a marginally significant trend observed for regular exercise engagement.

The prevalence of limited health literacy observed in our study (68.6%) is consistent with, though somewhat higher than, rates reported in the international literature. A system-

atic review by Ryman et al.^[25] reported health literacy rates among cancer patients ranging from 11% to 86% across different populations, with significant variation depending on the measurement tool used and the demographic characteristics of the study population. The elevated rate observed in our study likely reflects the sociodemographic profile of our participants, with more than half (52.4%) having completed only primary school education. Previous research has consistently demonstrated that lower educational attainment is associated with limited health literacy.^[26,27]

Our finding of a significant association between health literacy and organic food consumption ($p=0.029$) represents a novel contribution to the literature. Patients with excellent health literacy were twice as likely to always purchase organic products (42.9%) compared to those with inadequate health literacy (21.3%). This finding may be explained by several mechanisms. First, patients with higher health literacy may have greater awareness of potential health benefits associated with organic food consumption, including reduced pesticide exposure and potentially higher nutritional value.^[11,12] Second, higher health literacy is often associated with better socioeconomic status, which may facilitate access to organic products that typically carry a price premium.^[28] Third, patients with greater health literacy may be more receptive to and capable of implementing dietary recommendations provided by healthcare professionals or found through health information seeking.

The significant relationship between health literacy and medication research behavior ($p=0.031$) aligns with previous findings demonstrating that health-literate patients are more engaged in their healthcare management.^[20,29] Patients with excellent health literacy demonstrated markedly higher rates of always researching their medications (78.6%) compared to those with inadequate literacy (50.0%). This finding is particularly relevant in oncology settings, where patients often receive complex multi-drug regimens with significant side effect profiles. Active medication research may indicate greater patient engagement and could potentially improve medication adherence and early recognition of adverse effects.^[30]

The marginally significant association between health literacy and regular exercise ($p=0.070$) observed in our study, while not reaching conventional statistical significance, reveals a clinically meaningful pattern. The proportion of patients always engaging in regular exercise was substantially higher among those with excellent health literacy (23.1%) compared to those with inadequate literacy (3.9%)—a nearly six-fold difference. This gradient pattern is consistent with literature demonstrating that health-literate individuals are more likely to adopt and maintain physical

activity behaviors.^[31,32] In the context of cancer care, where physical activity has been shown to reduce treatment-related fatigue, improve physical function, and potentially influence survival outcomes, this disparity has important clinical implications.^[13,14]

Several potential mechanisms may explain the observed relationships between health literacy and healthy lifestyle behaviors. First, patients with higher health literacy may have greater access to and comprehension of health promotion information, enabling them to understand the rationale behind lifestyle recommendations.^[18] Second, health literacy encompasses not only the ability to find information but also to critically evaluate and apply it, suggesting that health-literate patients may be better equipped to translate knowledge into behavioral change.^[33] Third, health literacy is associated with greater self-efficacy and patient activation, which are known predictors of health behavior adoption.^[34,35]

Our finding that patients with excellent health literacy had significantly lower rates of comorbidities requiring medication (27.6% vs. 53.6% in the inadequate group, $p=0.083$) is noteworthy and may represent either a cause or consequence of health literacy differences. Higher health literacy may contribute to better chronic disease prevention through healthier lifestyle behaviors, or conversely, the presence of multiple comorbidities may complicate health information processing and reduce health literacy scores.^[36,37] This relationship warrants further investigation through longitudinal studies.

The clinical implications of our findings are significant. Given the high prevalence of limited health literacy and its association with reduced engagement in healthy lifestyle behaviors, oncology care providers should consider integrating health literacy assessment into routine clinical practice. Tailored interventions that address the needs of patients with limited health literacy may be necessary to promote healthy lifestyle adoption during cancer treatment. These interventions might include simplified educational materials, teach-back methods to verify understanding, visual aids, and repeated exposure to key messages.^[38,39]

Several limitations of this study should be acknowledged:

First, the cross-sectional design precludes causal inference regarding the direction of the relationship between health literacy and lifestyle behaviors. It is possible that engaging in healthy behaviors over time contributes to improved health literacy through repeated exposure to health information, suggesting a bidirectional relationship. Longitudinal studies are needed to clarify the temporal sequence and directionality of these associations.

Second, our single-center design and convenience sampling method may introduce selection bias and limit the generalizability of findings to other oncology populations or settings.

Third, self-reported measures of lifestyle behaviors are subject to both recall bias and social desirability bias, potentially leading to overreporting of healthy behaviors.

Fourth, the study did not account for important clinical variables including cancer type, disease stage, treatment regimen, or time since diagnosis, all of which may influence both health literacy and lifestyle behaviors.

Fifth, the marginally significant finding for regular exercise ($p=0.070$) did not reach the conventional threshold for statistical significance and warrants cautious interpretation.

Sixth, our use of chi-square tests and cross-tabulation for ordinal Likert-scale data, while appropriate for examining associations, does not provide effect sizes or fully utilize the ordinal nature of the data. Future studies should employ ordinal logistic regression or proportional odds models to better quantify the strength and direction of associations and to account for the ordered nature of health literacy categories.

Finally, the sample size may have limited our statistical power to detect smaller but clinically meaningful associations between health literacy and some lifestyle behaviors.

Future studies should employ longitudinal designs, objective measures of lifestyle behaviors, larger sample sizes, and more comprehensive assessment of clinical variables to address these limitations. Despite these limitations, our study contributes to the growing body of literature on health literacy in oncology by demonstrating significant associations with organic food consumption and prescription drug research behaviors, underscoring the importance of addressing health literacy as a modifiable factor that may influence patient engagement in health-promoting behaviors during cancer treatment.

Conclusion

This study demonstrates a significant relationship between health literacy and healthy lifestyle behaviors among oncology patients, with important implications for clinical practice. We found that limited health literacy is highly prevalent (68.6%) among cancer patients receiving active treatment and is significantly associated with reduced organic food consumption and medication research behaviors. Additionally, a clinically meaningful trend was observed suggesting that patients with higher health literacy are more likely to engage in regular physical exercise.

These findings highlight the need for health literacy-informed approaches in oncology care that address not only

patients' medical treatment needs but also their capacity to engage in health-promoting behaviors. Healthcare providers should consider assessing health literacy as part of routine oncology practice and tailoring lifestyle counseling to accommodate patients with limited literacy. Educational interventions designed with health literacy principles—including plain language, visual aids, and interactive methods—may be more effective in promoting healthy lifestyle adoption among cancer patients.

Future research should employ longitudinal designs to elucidate the causal relationships between health literacy and lifestyle behaviors, investigate the effectiveness of health literacy-targeted lifestyle interventions in oncology settings, and explore the impact of improved lifestyle behaviors on cancer treatment outcomes and survivorship. Given the potential for healthy lifestyle behaviors to influence treatment tolerance, quality of life, and possibly survival outcomes, addressing the health literacy-lifestyle behavior gap represents an important opportunity for improving comprehensive cancer care.

Disclosure

Ethics Committee Approval: This study was approved by Marmara University Clinical Research Ethics Committee (Approval Date: 17.02.2025, Approval Code: 09.2024.991) and conducted in accordance with the Declaration of Helsinki.

Informed Consent: Written informed consent was obtained from all participants prior to data collection.

Conflict of Interest: The authors declare no conflicts of interest.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Use of AI for Writing Assistance: Artificial intelligence - assisted tools (ChatGPT, OpenAI, GPT-5) were used solely for language editing and improvement of manuscript clarity. AI-assisted tools were not used for data analysis, interpretation, or generation of scientific content.

Author Contributions: Concept: AÇ, MS; Design: AÇ, NAB, AKG, YA, EK, PE, SI; Supervision: MS, OK, İVB, EÇ; Data Collection and Processing: AÇ, MS, NAB; Analysis and Interpretation: AÇ; Literature Review: AÇ, MS, OK; Writing: AÇ, MS; Critical Review: AÇ, MS.

Peer-review: Externally peer reviewed

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