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Investigation of Treatment Information Literacy Needs and Its Determinants among Cancer Patients in Yazd; Iran

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Background and Objectives: Cancer represents one of the most significant health challenges globally, imposing a considerable burden of physical, psychological, and social complications on patients and their families. Access to comprehensive and accurate information about the disease, treatment options, side effects, and management strategies is crucial for empowering patients, enhancing their involvement in treatment decisions, and improving their quality of life. This study aims to investigate the treatment information Literacy needs and Its Determinants among cancer patients in Yazd, Iran (Year 2024).

Materials and Methods: This analytical cross-sectional study was conducted in 2024 among 131 patients with cancer referred to government health centers in Yazd Province, Iran. Participants were selected through multistage sampling. Data were collected using the Cancer Treatment Information Literacy Questionnaire developed by Farzin et al. (2018). This 37-item questionnaire covers six domains: medications, treatment methods, nutrition, diagnostic tests, treatment costs, and exercise. Each item was scored on a 5-point Likert scale ranging from 1 (very low) to 5 (very high). Data analysis was performed in SPSS version 27 using descriptive statistics, one-way ANOVA, and multiple linear regression. A p-value of less than 0.05 was considered statistically significant.

Results: This study found the greatest information needs related to treatment costs (30.66 ± 7.60) and the least information needs regarding lab tests (11.25 ± 6.27). Regression analysis indicated that female patients ($\beta=-17.901$, $p=0.022$), rural residents ($\beta=-21.601$, $p=0.024$), and Self-employed individuals ($\beta=-21.415$, $p=0.037$) reported lower treatment information needs. Similarly, patients with carcinoma ($\beta=-20.032$, $p=0.015$) and those treated for >6 months ($\beta=-14.823$, $p=0.035$) showed lower needs. These findings highlight varying information needs among subgroups of cancer patients.

Conclusion: Cancer patients' treatment information literacy needs differed across domains and demographic groups. The greatest need was related to treatment costs, while the lowest was related to laboratory tests. Therefore, patient education programs should prioritize the domains with the highest reported needs and be tailored according to patients' demographic and clinical characteristics.

Keywords: Health Literacy, Cancer, Determinants of Health, Information Seeking Behavior, Health Services Accessibility

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Introduction

Cancer accounts for more than 12% of deaths worldwide and is one of the leading causes of premature mortality (1). In Iran, cancer is the second most common non-communicable disease and the third leading cause of death after cardiovascular diseases and accidents. Current estimates indicate that nearly 70,000 new cancer cases occur annually in the country, and this number is expected to double over the next two decades due to population aging (2).

Given the increasing incidence of cancer in recent decades and its wide-ranging effects on different aspects of life, including physical, emotional, spiritual, social, and economic dimensions, improving patients' knowledge and awareness about their disease and treatment is essential for effective management (3). One of the key factors influencing patients' understanding and ability to manage their condition is treatment information literacy (3). Treatment information literacy refers to the ability to use basic literacy skills, such as reading, writing, numeracy, listening, and speaking, to obtain, understand, evaluate, synthesize, and apply health-related information (4).

Treatment information literacy is particularly important in cancer care, where patients often face complex medical information and difficult treatment decisions. Patients and their caregivers are frequently required to make important decisions based on the information available to them. In this context, timely screening, accurate diagnosis, early initiation of treatment, and selection of appropriate treatment pathways can substantially improve survival outcomes (5). However, evidence suggests that many patients with cancer have limited treatment information literacy (6), which may reduce the use of preventive services and increase the likelihood of refusing or discontinuing treatment (7).

An important aspect of treatment information literacy in cancer care is the patient’s ability to seek, access, and use treatment-related information effectively throughout the course of the disease. Cancer patients need to strengthen their literacy by using a variety of information sources, communicating effectively with the treatment team, and correctly following treatment recommendations (8,9). Improved treatment information literacy can help patients make informed decisions about treatment options, medication use, and self-care (9). Recent studies have also shown that improving treatment literacy may serve as both an educational intervention and a preventive strategy in disease management, particularly in relation to treatment adherence (10). Patients who are better informed about their treatment process are more likely to participate in health-related decision-making and to adhere to recommended treatment strategies (11).

Common sources of information for patients with cancer include physicians, family members, friends, mass media, and the Internet (12–15). Farzin et al. reported that cancer patients had substantial information needs in several major domains, including medications, treatment methods, nutrition, diagnostic tests, and treatment costs (16). Access to sufficient and appropriate information during the treatment process enables patients to express their preferences and take part in decisions related to their care. Providing patients with relevant information and supporting their involvement in treatment decisions may improve the quality of care and enhance treatment effectiveness (15).

Although Farzin et al. examined treatment-related information needs and information sources among patients with cancer, evidence remains limited regarding how these needs manifest across different local contexts, including Yazd. Moreover, prior studies have largely focused on describing information needs and sources, while providing less insight into the demographic and clinical factors associated with treatment-related information needs. Given that regional differences in population characteristics, access to healthcare services, and social and care contexts may influence the type and intensity of patients’ information needs, generating local evidence from Yazd is necessary to identify priority information domains and vulnerable subgroups requiring greater support. Therefore, the present study was designed to investigate treatment-related information needs and their determinants among cancer patients in Yazd, Iran.

Materials and Methods

This study employed a cross-sectional design which focused on cancer patients referred to government medical centers in Yazd in 2024. To determine the sample size, we utilized the mean and standard deviation of 3.52 and 0.62, respectively, as reported in the study by Farzin et al. (2018) 11. Considering a 95% confidence interval, an 80% power, and a 5% non-response rate, a total sample size of 131 patients was estimated. For effect size calculations, an error margin equal to 0.25 of the study's standard deviation was applied. 131 cancer patients were selected through multi stage sampling from government medical centers in

Yazd. First of all, two centers were randomly selected (The Oncology Department of Shahid Sadoughi Hospital and the Shahid Ramezani Zadeh Radiotherapy Center), then, sample size from each center was determined by proportion to the number of cancer patients registered in each center; in the second stage, within each center, sampling was done through convenience sampling method. Inclusion criteria consisted of cancer patients undergoing treatment, diagnosed at least six months prior, aged between 18 and 65, and possessing at least minimum literacy. Exclusion criteria included unwillingness to continue participation and inability to complete the questionnaires due to acute health conditions.

Data were collected through self-report method using the Cancer Treatment Information Literacy Questionnaire designed in the study by Farzin et al. (11). The demographic variables assessed included gender, age, place of residence, marital status, number of children, level of education, occupation, type of cancer, family history of similar diseases, and the duration since diagnosis and initiation of treatment. The Cancer Patient Health Information Analysis Questionnaire comprised six domains (medications, treatment methods, nutrition, diagnostic tests, treatment costs, and exercise) with a total of 37 items, rated on a Likert scale from 5 (very high) to 1 (very low). The validity and reliability of this questionnaire were confirmed in the study by Farzin et al. (2018), which reported a Cronbach's alpha coefficient of 0.937 (11).

Descriptive statistics, including means (standard deviations) and frequencies (percentage frequencies), were used to characterize the variables. ANOVA and multiple linear regression analyses were employed for statistical inference. One-way ANOVA (followed by post-hoc comparisons where appropriate) and multiple linear regression analyses were employed for statistical inference. Due to the imbalanced group sizes across cancer types, the robustness of ANOVA results was considered carefully, and findings are presented with caution. All data analyses were conducted using SPSS version 27 software, with a significance level set at 5%.

Results

The study included 131 patients with cancer who were undergoing treatment at government health centers in Yazd. Of the participants, 71 (54.20%) were women and 60 (45.80%) were men, and 77 (58.78%) were older than 50 years. Carcinoma was the most common pathological type, observed in 53 women (74.65% of female participants) and 42 men (68.33% of male participants). Most participants lived in urban areas (116, 88.55%), while 78 (59.54%) were native to Yazd. In addition, 112 patients (85.50%) were married, 98 (74.81%) had less than a high school diploma, and 87 (67.18%) reported a family history of similar disease. For 61 participants (46.56%), more than six months had passed since diagnosis. Detailed demographic and clinical characteristics of the participants are presented in **Table 1.**

Table 1. Frequency distribution of patients' demographic information by cancer type and overall

Variables		Type of cancer								Overall	
		Carcinoma		Sarcoma		Leukemia		Lymphoma			
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	n	%
Sex	Male	41	68.33	4	6.67	9	15.00	6	10.00	60	45.80
	Female	53	74.65	4	5.63	9	12.68	5	7.04	71	54.20
Age	<=40	10	47.62	1	4.76	5	23.81	5	23.81	21	16.03
	40-50	25	75.76	2	6.06	4	12.12	2	6.06	33	25.19
	>50	59	76.62	5	6.49	9	11.69	4	5.19	77	58.78
Location	urban	82	70.69	8	6.90	17	14.66	9	7.76	116	88.55
	rural	12	80.00	0	0.00	1	6.67	2	13.33	15	11.45
Residence	native	54	69.23	3	3.85	13	16.67	8	10.26	78	59.54
	Non native	40	75.47	5	9.43	5	9.43	3	5.66	53	40.46
Marital status	married	84	75.00	5	4.46	14	12.50	9	8.04	112	85.50
	single	10	52.63	3	15.79	4	21.05	2	10.53	19	14.50
Educational status	undergraduate	72	73.47	7	7.14	14	14.29	5	5.10	98	74.81
	diploma	9	56.25	1	6.25	2	12.50	4	25.00	16	12.21
	Academic degree	13	76.47	0	0.00	2	11.76	2	11.76	17	12.98
Income level	Less than five million	39	76.47	2	3.92	6	11.76	4	7.84	51	38.93
	Five to ten million	47	72.31	5	7.69	11	16.92	2	3.08	65	49.62
	More than ten million	8	53.33	1	6.67	1	6.67	5	33.33	15	11.45
Occupation	Unemployed/housewife	55	75.34	4	5.48	10	13.70	4	5.48	73	55.73
	Employee/retiree	24	68.57	3	8.57	5	14.29	3	8.57	35	26.72
	Self-employed	15	65.22	1	4.35	3	13.04	4	17.39	23	17.56

Medical history	yes	39	88.64	1	2.27	3	6.82	1	2.27	44	33.59
	no	55	63.22	7	8.05	15	17.24	10	11.49	87	66.41
Family history of the disease	yes	55	62.50	7	7.95	16	18.18	10	11.36	88	67.18
	no	39	90.70	1	2.33	2	4.65	1	2.33	43	32.82
Duration of treatment	<1 month	43	70.49	6	9.84	10	16.39	2	3.28	61	46.56
	1-6 month	23	65.71	2	5.71	6	17.14	4	11.43	35	26.72
	>6 month	28	80.00	0	0.00	2	5.71	5	14.29	35	26.72
Time for diagnosis	<=6 month	43	70.49	6	9.84	10	16.39	2	3.28	61	46.56
	6-12 month	36	70.59	2	3.92	6	11.76	7	13.73	51	38.93
	>12 month	15	78.95	0	0.00	2	10.53	2	10.53	19	14.50

The average scores for information need across different dimensions of the Cancer Patients' Information Literacy Treatment Needs Questionnaire are presented in Table 2. As shown in **Table 2**, patients across all four cancer types reported their highest information needs regarding treatment costs (30.66 ± 7.60) and the lowest needs related to laboratory tests (11.25 ± 6.27).

Table 2. Frequency distribution of components measuring the level of patient treatment information literacy by cancer type

Components of treatment information literacy	Mean	SD	Type of Cancer								P*
			Carcinoma(n=94)		Sarcoma(n=8)		Leukemia(n=8)		Lymphoma(n=11)		
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Pharmaceutical literacy score	30.66	7.60	29.82	7.25	34.38	3.46	34.11	8.39	29.45	9.69	0.069
Treatment method literacy score	11.79	5.40	11.17 a	5.10	10.50 ab	4.75	15.28 b	5.96	12.36 ab	5.78	**0.023***
Nutrition literacy score	18.47	6.85	18.43	6.75	18.63	6.39	20.28	6.90	15.73	7.93	0.392
Literacy scores of tests	11.25	6.27	10.69 a	6.00	12.63 ab	7.01	15.00b	6.27	8.91 ab	6.28	**0.026***
Literacy score of treatment cost	35.97	14.94	33.93 a	14.63	38.50 ab	15.50	44.72 b	12.86	37.27 ab	16.63	**0.039***
Sports literacy score	22.58	5.11	22.11	5.66	24.38	1.77	23.00	4.09	24.64	1.21	0.298
Literacy score of overall treatment information	130.72	34.27	126.14	33.20	139	30.37	152.39	36.20	128.36	32.31	**0.023***

- **Significant level is < 0.05**
- Statistical test: ANOVA

According to **table 2**, It should be noted that the sample sizes across cancer types were highly imbalanced (Carcinoma: n=94, Sarcoma: n=8, Leukemia: n=18, Lymphoma: n=11). This imbalance may affect the reliability of ANOVA results, particularly for comparisons involving Sarcoma and Lymphoma groups. Therefore, the significant p-values reported for treatment method literacy (p=0.023), test literacy (p=0.026), treatment cost literacy (p=0.039), and overall treatment information literacy (p=0.023) should be interpreted with caution. Post-hoc comparisons using Games-Howell test (which does not assume equal variances) are recommended for future studies.

“Based on the regression analysis presented in Table 3, and in the context of cancer patients referring to government health centers in Yazd, Iran, after controlling for other variables, gender (B=-17.901, p=0.022), residence type (B=-21.601, p=0.024), employment type (B=-21.415, p=0.037), cancer type (B=-20.032, p=0.015), and duration of treatment (B=-14.823, p=0.035) were significantly associated with patients’ treatment information needs. Specifically, female patients, patients residing in rural areas, individuals with Self-employed, patients with carcinoma cancer, and patients undergoing treatment for longer than 6 months, each exhibited lower reported treatment information needs compared to their respective counterparts.

According to **table 3**, Model fit statistics indicated that the final multiple linear regression model explained approximately 23.4% of the variance in treatment information needs (Adjusted $R^2=0.234$, $F(12, 118) = 4.86$, $p<0.001$). The Durbin-Watson statistic was 1.92, suggesting no significant autocorrelation in the residuals. Residual diagnostics (Q-Q plot) confirmed approximate normality, and the mean Variance Inflation Factor was 2.14 (all VIFs <5, except for 'Medical History' with VIF=32.534, which should be interpreted with caution).

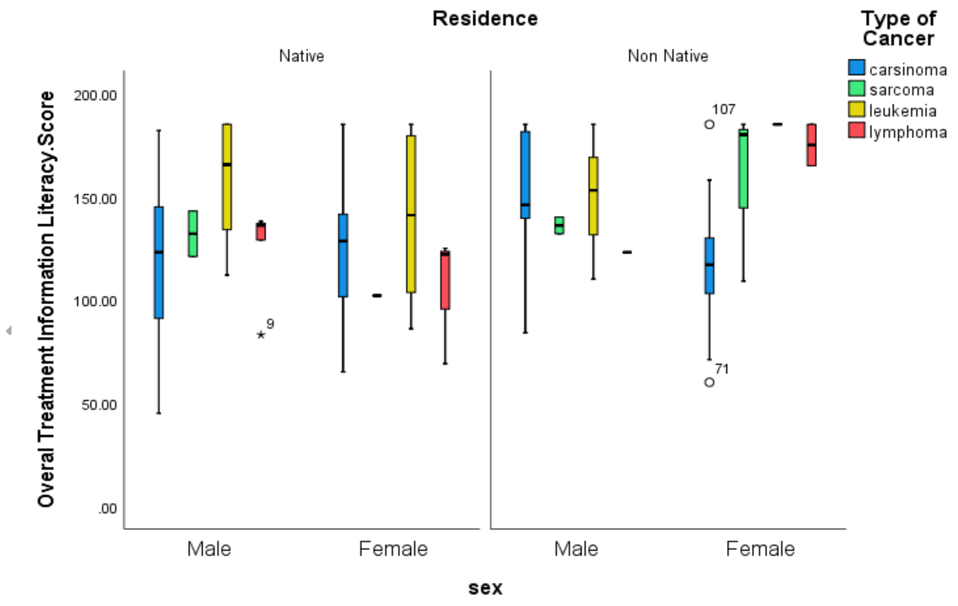
Figure 1 illustrates that the highest median treatment information score among native patients of both genders was for those with leukemia. In contrast, among non-native patients, the highest treatment information need score for men was also for those with leukemia, while for women, it belonged to those with sarcoma.

Table 3. Results of the linear regression model for factors related to the treatment information needs score of cancer patients

Variable	Levels	Univariate model		Multiple model		
		b	p	b	p	VIF*
	(Constant)			188.310	0.000	
Sex	M	reference	0.124	reference	**0.022**	2.146
	F	-9.254		-17.901		
Location	Urban	reference	.086	reference	**0.024**	1.324
	Rural	-16.169		-21.601		
Residence	Native	reference	0.060	reference	0.084	1.215
	Non-Native	11.470		10.220		
Marital Status	Single	reference	0.743		-------	-------
	Married	-2.809				
Medical	Yes	reference	0.021	reference	0.063	32.534

History	No	14.564		11.416		
Age	Less Than 40 Years	4.671	.577	2.742	0.751	1.462
	Between 40 And 50 Years	-12.961	0.069	-10.822	0.106	1.218
	More Than 50 Years	reference	------	- reference	-----	------
Educational Status	Undergraduate	reference	------	-- reference	-----	------
	Diploma	-7.936	0.384	-4.239	0.648	1.360
	Academic Degree	-22.149	.014	-9.433	0.340	1.610
Income Level	Less Than Five Million	reference	-------	reference	----	------
	Five to Ten Million	-11.200	0.080	-6.360	0.368	1.807
	More Than Ten Million	-16.949	0.092	-13.671	0.237	1.982
Occupation	Unemployed/Housewife	reference	-------	reference	-------	------
	Employee/Retiree	-10.939	0.121	-13.028	0.177	2.666
	Self-employed	-10.164	0.215	-21.415	0.037	2.175
Type of Illness	Carcinoma	26.251	0.003	-20.032	0.015	1.961
	Sarcoma	12.862	0.298	-20.022	**0.130**	1.134
	Leukemia	reference	-------	reference	-------	-------
	Lymphoma	2.225	0.835	-9.813	0.552	1.375
Duration of Treatment	Less Than One Month	reference	------	reference	**-----**	-------
	One to Six Months	-17.202	0.15	-10.844	0.109	1.291
	More Than Six Months	-23.002	.001	-14.823	0.035	1.375

* Variance Inflation Factor



Native women: 43
Non-native women: 28
Native men: 35
Non-native men: 25

Figure 1. Treatment information literacy need score by disease type, gender, and residence status

This study aimed to assess treatment information literacy needs and their associated factors among patients with cancer. In line with the cross-sectional design, the observed relationships should be interpreted as associations rather than causal effects. The findings showed that treatment costs represented the highest area of information need, whereas laboratory tests represented the lowest.

The prominence of treatment cost-related information needs likely reflects the substantial financial burden of cancer care. Many patients, particularly those with limited financial resources, may actively seek information about treatment expenses, insurance coverage, and available financial support in order to make feasible decisions about their care. Previous research has similarly shown that treatment costs are among the most challenging aspects of cancer management and can influence both treatment choices and adherence to recommended therapies (16,17). In recent years, rising healthcare expenditures and fluctuations in the cost of medications may have further intensified patients' concerns, increasing their demand for clear and practical information in this domain. These findings underscore the importance of financial counseling, transparent communication about expected costs, and improved access to insurance and support services.

Our findings are also consistent with earlier studies reporting that medications and treatment methods are major components of cancer patients' information needs (11). Cancer patients are often required to understand complex therapeutic options, medication regimens, side effects, and self-care recommendations. International studies have likewise shown that information about disease characteristics, available treatment options, and future health risks constitutes a central concern for patients with cancer (8,18,19). Access to accurate and understandable treatment information may therefore improve patients' ability to participate in decision-making and manage the treatment process more effectively.

The present study further showed that treatment information literacy needs varied according to demographic and clinical characteristics, including cancer type, gender, place of residence, and employment status. These differences likely reflect not only clinical variation, but also broader behavioral, social, and psychological factors that shape how patients perceive, seek, and use treatment-related information.

Patients with blood cancers reported greater treatment information literacy needs than those with other cancer types. This finding may be explained by the complexity, duration, and uncertainty of treatment protocols for hematological malignancies, which often require repeated hospital visits, close monitoring, and ongoing adjustment of treatment plans (22). Such conditions may increase patients' need for information regarding medications, adverse effects, prognosis, and long-term management. Similar findings have been reported in other studies, where patients with chronic or prolonged cancer trajectories demonstrated greater demand for health-related information than those with more localized or potentially curable conditions (23,24). A study from China also found that patients with blood cancers had particularly high information needs because of the prolonged and complicated nature of treatment (25). Nevertheless, the differences observed across cancer types should be interpreted cautiously, given the imbalance in subgroup sizes, especially the relatively small number of patients with sarcoma. This imbalance may limit the stability and generalizability of between-group comparisons.

Gender differences were also observed, with female patients reporting lower treatment information literacy needs than male patients. This finding should be interpreted carefully. Lower reported need does not necessarily indicate lower actual need; rather, it may reflect differences in expectations, communication patterns, perceived self-efficacy, or preferred sources of support. Women may rely more heavily on informal information networks, such as family members, friends, and online communities, which could partially meet their perceived need for formal treatment-related information. In addition, sociocultural norms may shape how women communicate with healthcare providers, ask questions, or express unmet informational needs. Previous studies have also reported lower treatment information literacy among women, particularly among those from more socioeconomically disadvantaged backgrounds (9,26–29). These findings suggest that gender-sensitive communication strategies may be needed to ensure that patients' information needs are identified accurately rather than inferred solely from their expressed demand.

Employment status was another significant factor. Self-employed patients reported lower treatment information literacy needs compared with other occupational groups. Several explanations may be considered. Self-employed individuals may face greater financial pressure, time constraints, and occupational instability, which can reduce their ability or willingness to engage in active information-seeking during treatment. They may also prioritize immediate practical concerns, such as maintaining income and work continuity, over seeking detailed treatment-related information. At the same time, formally employed individuals may have better access to insurance benefits, workplace social support, and structured information channels, all of which may influence how they perceive and express informational needs (31). Therefore, occupational differences in reported information needs may reflect broader disparities in resources, stressors, and opportunities for engagement with healthcare information.

Place of residence was also associated with treatment information literacy needs, with urban patients reporting higher needs than rural residents. This difference should not be interpreted simply as indicating that rural patients need less information. Rather, it may reflect unequal access to information resources, lower exposure to health education programs, different expectations regarding physician-patient communication, or stronger reliance on physician-directed decision-making in rural settings. Previous studies have shown that treatment information literacy tends to be lower among rural populations, partly because of reduced educational opportunities, weaker access to digital and institutional information sources, and structural barriers to healthcare communication (35–37). Rural patients may therefore underreport their needs, not because those needs are objectively lower, but because their opportunities and confidence to seek information are more limited. This interpretation highlights the importance of expanding accessible and culturally appropriate educational resources in rural areas.

More broadly, the observed differences across gender, residence, and employment groups can be understood in light of social determinants of treatment information literacy. Factors such as educational attainment, household income, digital access, social support, cultural expectations, and prior experiences with healthcare systems may all shape patients' ability to recognize, express, and address their treatment-related information needs (32–34). For example, individuals with fewer resources or lower confidence in interacting with healthcare professionals may be less likely to ask questions, seek clarification, or identify gaps in their own understanding. Thus, lower reported need should not automatically be interpreted as lower actual need.

Age was not significantly associated with treatment information literacy needs in the present study. Although some previous studies have reported lower treatment information literacy among older adults in Iran, our findings suggest that age alone may not be a sufficient predictor of expressed information needs in this population (37,38). It is possible that other factors, such as education, disease experience, family support, and access to healthcare providers, play a more influential role than chronological age itself.

From a practical perspective, these findings suggest several implications for cancer care. Because treatment costs emerged as the most prominent area of need, oncology services should consider integrating financial counseling and clear information about insurance coverage, reimbursement pathways, and available support resources into routine patient education (37–39). In addition, educational interventions should be tailored to the needs of specific patient groups, particularly those whose lower reported needs may mask unmet informational needs, such as women, rural residents, and self-employed patients. A combination of verbal counseling, printed educational materials, and digital tools may help improve access to treatment-related information, although non-digital options remain essential for patients with limited digital literacy or restricted internet access (43,44).

The findings of this study should also be generalized with caution. Because the study was conducted in two government health centers in Yazd, the observed pattern of treatment information literacy needs may differ in private hospitals, other provinces, or healthcare systems with different social and economic contexts (20,21). Differences in healthcare infrastructure, service organization, and patient socioeconomic profiles may influence both the level and type of information patients seek during treatment. Future multicenter studies are therefore needed to examine the consistency of these findings across broader settings.

Finally, future research should adopt longitudinal designs to explore how treatment information literacy needs change over the course of diagnosis, treatment, and survivorship. Additional qualitative studies may also be valuable for clarifying why certain groups report lower needs and for identifying the behavioral, cultural, and emotional factors that influence patients' information-seeking patterns.

Study Limitations and Strengths: This study has several limitations. First, the use of self-reported data may have introduced recall bias and social desirability bias, which could affect the accuracy of participants' responses. Second, patients with acute health conditions were excluded, and therefore the findings may not fully reflect the treatment information literacy needs of more critically ill patients. Third, the cross-sectional design prevented assessment of changes in information needs over time and did not allow causal inference.

In addition, the study sample was drawn from two government health centers in Yazd, which may limit the generalizability of the findings to patients receiving care in private institutions or in other geographic regions. The subgroup distribution across cancer types was also uneven, with relatively small numbers in some categories, which may have affected the stability of between-group comparisons.

Finally, the multiple regression model showed a high variance inflation factor (VIF = 32.534) for the medical history variable, indicating possible multicollinearity. As a result, the coefficient estimate for this variable should be interpreted with caution. Future studies with larger samples and alternative model specifications are recommended to address this issue.

Conclusion

Our findings indicate that cancer patients' treatment information literacy needs are domain-specific and vary across population subgroups. Cost-related information emerged as the most prominent unmet need, highlighting the importance of integrating financial counseling and transparent communication about treatment expenses into routine oncology care. Given the observed subgroup differences, educational materials and communication strategies should be adapted for different patient groups (e.g., by sex, residence, and employment status). Future longitudinal and multicenter studies are recommended to examine changes in needs over time and improve generalizability.

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Conflict of interest: the authors stste that there is no conflicy of interest in the present syudy.

Consent for publication: Not applicable

Ethics approval and consent to participate: This study received approval from the Research Ethics Committee of Shahid Sadoughi University of Medical Sciences in Yazd, with the ethics code

IR.SSU.REC.1402.073. Permissions were obtained from medical center officials, and informed consent was secured from participants. Sufficient information regarding the research objectives, confidentiality of information, voluntary participation, and the right to withdraw at any stage of the study was provided to all participants. The study was conducted using the principles of the Declaration of Helsinki.

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