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Determinants of Cancer-Related Online Information-Seeking Intentions of Cancer Patients Receiving Chemotherapy

Kemoterapi Alan Kanser Hastalarının Kanserle İlgili Çevrimiçi Bilgi Arama Niyetlerinin Belirleyicileri

[1]Ersin ESKİLER, [2]Cemil BİLİR, [3]Remzi ALTUNIŞIK

[1]Sakarya University of Applied Sciences, Faculty of Sport Sciences, Department of Sport Management Sakarya, Türkiye
[2]İstinye University, Faculty of Medicine, Department of Internal Medical Sciences, İstanbul, Türkiye
[3]Sakarya University, Faculty of Business, Department of Production Management and Marketing, Sakarya, Türkiye

Ersin Eskiler: https://orcid.org/0000-0001-7617-2958
Cemil Bilir: https://orcid.org/0000-0002-1372-4791
Remzi Altunişik: https://orcid.org/0000-0001-7934-1841

ABSTRACT

Objective: In this research, we aimed to determine the factors affecting cancer patients' intention to seek cancer-related information online.

Materials and Methods: The research was carried out in the context of the cross-section approach and relational survey model among the general survey models. Data were collected by a face-to-face survey from people treated at Sakarya University Faculty of Medicine, Oncology Department between April and November 2021. Total of 240 people voluntarily participated in the research, including 140 females (Age:47.10±10.78) and 100 males (Age:53.88±13.58) diagnosed with cancer in the 18-84 age range (Age:49.93±12.45).

Results: As a result of the stepwise regression analysis, the factors of attitude, ISA, and ISQ had a statistically significant positive effect on the patient's intention to search for health information on the Internet, whereas facilitating conditions did not have a statistically significant effect.

Conclusions: It is anticipated that the research results will provide guidance for understanding and successfully managing the information-seeking behaviours of cancer patients.

Keywords: Information-seeking behaviour, Internet use, cancer patients

ÖZ

Amaç: Bu araştırmada, kanser hastalarının internet üzerinden kanserle ilgili bilgi arama niyetlerini etkileyen faktörlerin belirlenmesi amaçlanmaktadır.

Materyal ve Metot: Araştırma, genel tarama modellerinden kesit alma yaklaşımı ve ilişkisel tarama modeli bağlamında gerçekleştirilmiştir. Veriler Nisan-Kasım 2021 tarihleri arasında Sakarya Üniversitesi Tıp Fakültesi Onkoloji Bölümü'nde tedavi gören kişilerden yüz yüze anket tekniği ile toplanmıştır. Araştırmaya 18-84 yaş aralığında (Yaş: 49,93 ± 12,45) kanser teşhisi alan 140 kadın (Yaş: 47,10 ± 10,78) ve 100 erkek (Yaş: 53,88 ± 13,58) olmak üzere 240 kişi gönüllü olarak katılmıştır.

Bulgular: Gerçekleştirilen aşamalı regresyon analizi sonucu hastaların internetten sağlık bilgisi arama niyeti üzerinde, tutum, bilgi kaynağı erişilebilirliği ve bilgi kaynağı kalitesi faktörlerinin istatistiksel olarak anlamlı pozitif etkisi olduğu, buna karşın kolaylaştırıcı koşulların istatistiksel olarak anlamlı bir etkisinin olmadığı belirlenmiştir.

Sonuç: Araştırma sonuçlarının kanser hastalarının bilgi arama davranışlarının anlaşılmasına ve başarılı bir şekilde yönetilebilmesine rehberlik sunacağı öngörülmektedir.

Anahtar Kelimeler: Bilgi arama davranışı, internet kullanımı, kanser hastaları

Sorumlu Yazar / Corresponding Author:
Ersin Eskiler
Sakarya University of Applied Sciences, Serdivan, Sakarya, Türkiye
Tel: +90 264 616 0339
E-mail: eeskiler@subu.edu.tr

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INTRODUCTION

Cancer, a group of diseases resulting from the abnormal proliferation of cells in the human body, is one of the chronic diseases that is becoming increasingly common as one of the leading causes of death worldwide.[1,2] In fact, the IARC 2020 World Cancer Statistics report estimated 19.3 million new cancer diagnoses and 10 million cancer deaths globally.[3] In Türkiye, cancer ranks as the second leading cause of death among adults.[4] When individuals are diagnosed with cancer, they often seek more information about the illness, hoping to gain a sense of control and understanding regarding the disease, available treatment, and other options.[5]

Health information-seeking is a goal-oriented activity that critically evaluates the usefulness and reliability of each piece of information obtained from various sources, such as disease risks, actively and intentionally.[6-8] Although the increase in Internet use facilitates access to information, studies have emphasised the concerns about accessing accurate and reliable information about health and the harmful effects of this information in the diversity of data on the Internet.[9-11] Moreover, the resources used in searching for information about health/disease are changing from healthcare professionals to digital resources.[2,12,13]

The information needs of cancer patients have been addressed in various categories, including the nature of the disease, progress and prognosis of the disease, side effects of treatment, social life, self-care problems, and sexual concerns.[13] This, in turn, contributes to their ability to manage their health or support the health of those around them. It strengthens their decision-making processes and aids them in their interactions with healthcare professionals.[10,14,15]

Previous research has identified critical variables influencing cancer information-seeking.[16,17] Lwoga et al. adopted the factors of attitude, facilitating conditions,[18,19] information resource quality (ISQ), and information resource accessibility (ISA).[9,20] Attitude refers to an individual's general emotional reaction towards a particular phenomenon.[18] Studies have shown that attitude can predict the intention to use the Internet for health information-seeking.[9,21] Facilitating conditions are related to individuals' perceptions of the available resources and support to engage in a particular behaviour. According to Marton, ISQ is associated with relevance and reliability, influencing information-seeking behaviour.[20] On the other hand, ISA is tied to the ease with which individuals can physically and cognitively understand the obtained information.

This research aimed to assess the effects of potential factors (attitude, facilitating conditions, ISQ, and ISA) on the intention of cancer patients receiving chemotherapy to seek information on the disease through the Internet.

MATERIALS AND METHODS

Ethical Considerations: The research was carried out by the Principles of the Declaration of Helsinki after the necessary permissions were obtained from the Sakarya University Faculty of Medicine Clinical Research Ethics Committee (Date:22/07/2020, decision no:174).

Type of Research*:* The research was conducted in the context of a cross-section approach and relational survey model among the general survey models.

Research Group and Procedure*:* The research group consisted of 140 female and 100 male participants diagnosed with cancer in the 18-84 age range (Age:49.93±12.45). Data were collected by face-to-face survey technique, under a doctor's supervision and permission, from people treated in the Oncology Department of Sakarya University Faculty of Medicine in April-November 2021. After briefly explaining the research, 240 (54%) of the people contacted completed the survey. Other contacts (46%) were excluded from the research because they did not want to participate, did not use the Internet, or did not complete the questionnaire. In the research, the participants were asked to confirm their demographic information and clinical status previously collected by the panel to ensure data quality. The questionnaire took 8-12 minutes to complete, and the informed consent process was completed by all participants included in the research.

Data Collection: The research data were collected with a descriptive information form and a questionnaire including 30 items to determine the participants' information-seeking behaviour and intention to use the Internet to access this information. The scales for measuring the intention to seek information about the disease and its determinants were brought together as a result of the literature review. Accordingly, attitudes (5 items), facilitating conditions (4 items),[9,18] ISA (5 items), ASQ (3 items),[9,20] and intention to search for information on cancer from the Internet (6 items)[21] a total of 23 items were included in the questionnaire form. Except for the descriptive information form, all items were scored on a 5-point Likert type.

Statistical Analysis*:* After the data obtained were coded into the IBM SPSS program, descriptive statistics, Chi-square test for determining significant differences between variables, Pearson correlation analysis for determining relationships, and searching for information on cancer from the Internet. Multiple linear regression analyses were used to evaluate the predictors of intention. Whether the data satisfied the normality condition was examined with skew-

ness and kurtosis values, and all values met the criteria[22] of being between ±2. Before the multiple linear regression analysis, in order to determine whether there is multi-collinearity in the data pattern, the binary correlations for the three regression models were less than 0.80, the tolerance values were greater than 0.20, the variance inflation factor was less than 10, and the highest Condition Index value was determined to be less than 30.[23,24] Durbin-Watson (DW=1.837) coefficient values were 1.5-2.5, and no autocorrelation problem existed between variables.[23] There were no extreme/outlier values.[25] It was determined that the scales' Cronbach Alpha internal consistency coefficients took a value between 0.951 and 0.714.

RESULTS

It was seen that 95% of the patients evaluated the quality of the health service provided as excellent, and 91.7% were satisfied with the service provided (Table 1). In addition, it was determined that there was no statistical difference between females and males in terms of the quality of health services provided (χ^2=0.361, p>0.05) and satisfaction levels from these services (χ^2=0.399, p>0.05). Similarly, there was no statistical difference between patients aged ≤50 years and ≥51 years in terms of satisfaction levels (χ^2=0.024, p>0.05) from the services provided.

Table 1. Difference analysis of quality of health services provided and satisfaction of health services provided.

		Quality of health services provided			Satisfaction of health services provided		
		Deficient	**Perfect**	**p**	**Dissatisfied**	**Satisfied**	**p**
Gender	Female	6(2.5)	134(55.8)	0.562	13(5.4)	127(52.9)	0.639
	Male	6(2.5)	94(39.2)		7(2.9)	93(38.8)	
Age	≤50	2(0.8)	122(50.8)	-	10(4.2)	10(4.2)	0.876
	≥51	10(4.2)	106(44.2)		114(47.5)	106(44.2)	

Notes N=240*:* f(%).

Whereas 65% of the patients requested detailed information about their disease and wanted to decide their disease in this context, 19.6% of them wanted limited information about their disease and left the decision to their doctors. As a result, only 15.4% of patients wanted to receive positive information about their disease (Table 2). It was determined that there was no statistical difference between females and males (χ^2=3.742, p>0.05) and patients ≤50 years and ≥51 years (χ^2=4.560, p>0.05) in terms of the type of information requested.

Table 3 compares female and male patients ≤50 years and ≥51 years of age according to the patient's intention to search for information about the disease on the Internet and the factors affecting this intention. There was a statistically significant difference between males and females regarding their attitudes towards searching for information about the disease on the Internet (t=-2.673, p<0.01). Accordingly, males ($\bar{x}$=2.84±0.97) exhibited more positive attitudes than females ($\bar{x}$=2.53±0.86) in terms of their attitudes towards searching for information on the Internet about the disease. On the other hand, no statistically significant difference was found between males and females in terms of other factors (p>0.05). Similarly, when the age variable was taken into account, no statistically significant difference was found between patients aged ≤50 years and ≥51 years in terms of the intention to seek information about the disease and the factors affecting this intention (p>0.05).

Table 2. Difference analysis of information request.

		Gender		Age	
		Female	**Male**	**≤50**	**≥51**
I want all the information about my disease and want to reach a decision.	f	98	58	84	72
	%	40.8%	24,2%	35%	30%
I just want to receive positive information about my disease.	f	18	19	22	15
	%	7.5%	7,9%	9.2%	6.3%
I only want limited information and would prefer the doctor to decide.	f	24	23	18	29
	%	10.0%	9,6%	7.5%	12.1%
	p	0.154		0.102	

Table 3. Difference analysis of variables.

Variables			Attitude		Facilitating conditions		Information source quality		Information source accessibility		Usage intention of Internet	
		n	*t*	p	*t*	p	*t*	p	*t*	p	*t*	p
Gender	Female	140	-2.673	0.008	-1.264	0.208	0.237	0.813	1.397	0.164	-0.049	0.961
	Male	100										
Age	≤50	124	-1.863	0.064	-0.462	0.645	0.558	0.577	1.945	0.053	0.815	0.416
	≥51	116										

When Table 4 was examined, a mediate level statistically significant relationship was detected between the intention to seek information about the disease from the Internet and attitude (r=0.562, p<0.01), facilitating conditions (r=0.446, p<0.01), and ISA (r=0.410, p <0.01). Additionally, a low-level statistically significant relationship was determined between the intention to seek information about the disease and ISQ (r=0.290, p<0.01).

The stepwise regression method was used to determine the variables that significantly contribute to predicting the intention to search for information about the disease and the contribution of each of these variables to the total variance explained. At the end of the three models put forward by applying this method, the total variance ratio of the intention to search for online information was reached (Table 5).

Table 4. Correlations between variables.

Variables		Facilitating conditions	Information source quality	Information source accessibility	Usage intention of Internet
Attitude	r	0.510**	0.257**	0.191**	0.562**
Facilitating conditions	r	1	0.218**	0.327**	0.446**
Information source quality	r		1	0.139*	0.290**
Information source accessibility	r			1	0.410**

Notes: n=240; **: p< 0.01; *: p< 0.05.

Table 5. Regression analysis results on predictors of usage intention of the Internet.

Model	Factors	β	Std. Error	β	t	p
1	(Constant)	1.471	0.173		8.484	0.000
	Attitude	0.646	0.062	0.562	10.479	0.000
2	(Constant)	-0.084	0.298		-0.281	0.779
	Attitude	0.577	0.058	0.502	9.885	0.000
	Information source accessibility	0.486	0.078	0.315	6.198	0.000
3	(Constant)	-0.414	0.324		-1.280	0.202
	Attitude	0.542	0.059	0.471	9.119	0.000
	Information source accessibility	0.468	0.078	0.303	6.002	0.000
	Information source quality	0.159	0.064	0.127	2.482	0.014

Dependent Variable: Usage intention of internet

Model 1: F= 109.799**, R^2= 0.316 $_{adj}R^2$= 0.313

Model 2: F= 82.740**, R^2= 0.411 $_{adj}R^2$= 0.406

Model 3: F= 58.414**, R^2= 0.426 $_{adj}R^2$= 0.419

**p<.01

Three significant models were obtained as a result of stepwise regression analysis. It was determined that the attitude factor included in the regression equation in the first model explained 31.3% of the usage intention of Internet variance (F=109.799, p<0.01. $_{adj}R^2$=0.313). In other words, the strongest predictor of usage intention of the Internet was determined as an attitude factor. In the second regression model, the ISA factor was added to the model after the attitude factor, and the usage intention of Internet explained variance increased from 31.3% to 40.6% with the addition of this variable to the model (F=82.740, p<0.01, $_{adj}R^2$=0.406). In this context, the ISA factor contributes 9.3% to the variance explained. In the third regression model, besides the attitude and ISA factors, the ISQ factor was added to the model, and it was determined that these factors explained 41.9% of the usage intention of Internet total variance (F=58.414, p<0.01, $_{adj}R^2$=0.419). ISQ, the last factor added to the model, contributed 1.3% to the explained variance. Furthermore, the effect of each factor on the model was significant, and Beta values were positive. The obtained findings showed that as attitude, ISA, and ISQ scores increase, usage intention of Internet score will also increase.

DISCUSSION AND CONCLUSION

In this research, we determined the effects of attitude, facilitating conditions, ISQ, and ISA on the intention to seek information about the disease from the Internet.

It was determined that the participants received chemotherapy treatment for fourteen different cancer types. The three most common cancer types were breast cancer 36.25%, lung cancer 14.58%, and colon cancer 12.8%. In this context, breast cancer in females and lung cancer in males are the most common cancer types, and this situation is consistent with Türkiye's most common cancer types.[26] It was determined that the participants' quality of the health services offered and their satisfaction with these services did not differ depending on gender and age. Again, although there was no difference in gender and age, it was seen that patients wanted to have detailed information about their health status and a say in the decisions to be taken in this context. Finally, it could be stated that the participants' attitudes towards information-seeking behaviour on the Internet differ in favour of males; in other words, males exhibited a relatively more positive attitude. However, the participants' intentions to search for information on the Internet and other factors affecting these intentions did not differ depending on gender and age. In light of the explanations, it has been determined that the research participants have similar characteristics, especially in the health services provided and their tendency to seek health information.

The findings revealed a positive relationship between the intention to search for information about the disease from the Internet and attitude, facilitating conditions, ISA, and ISQ. As a result of the stepwise regression analysis performed in this context, three models were obtained, and it was determined that the model with the highest explained variance rate was the third model. According to Model 3, attitude, ISA, and ISQ tended to increase participants' Internet use intention to obtain cancer information. In contrast, facilitating conditions were not included in the model.

The findings reveal that attitude towards technology plays an essential role in participants' intention to use the Internet to search for cancer information. Attitude is a critical determinant of intention.[27] In a study conducted with a sample of HIV patients, it was reported that the attitude factor significantly affects disease-related Internet use intention.[9] Mayer et al. state that the Internet has become essential for exchanging cancer information and support.[14] In this context, it is predicted that patients with a positive attitude towards the effects and benefits of online information resources will be more likely to use the Internet to access information. For this reason, it is crucial to inform and guide patients about the importance of Internet-based information to increase Internet use related to these diseases/health conditions.

Information resource availability is the second strongest predictor of the intention to search for information about the disease online. In other words, the positive effect of ISA on the information-seeking intentions of the patients is supported. Previous studies have revealed that ISA has a significant impact on Internet use/intent to use the Internet to search for health information.[9,20,28] The results obtained in this research supported the results of previous studies. This may mean that cancer patients need tools like the Internet and digital equipment for information-seeking intentions and behaviours.[19] Access to a sufficient number of information resources, such as technical support, online tutorials, and promotions on health-related topics/concepts, which may be necessary to support the information-seeking experience of cancer patients, is crucial to improve the intention to search for information on disease/health from the Internet.

The positive effect of the ISQ on the information-seeking intentions of the patients is another important finding of the research. This finding supports Leung's study, which revealed that Internet use is positively associated with the quality of online health information.[29] ISQ is related to relevant websites' availability, ease of use, and reliability.[14,20] Similarly, Lwoga et al. state that health-related web-

sites should be simple, user-friendly, and easy to use.[9] For this reason, considering the potential of directing users, it is crucial that Internet resources related to cancer contain accurate and reliable information about the subject sought. Consistent and reliable interaction between the Internet information provider and the patient can allow the resource to be designed according to the information patients need and increase its use.

In conclusion, information sources are differentiated due to technological developments, and access to these sources is diversified. These developments also place changes in health systems, placing more responsibility on patients to participate actively in decision-making and disease management.[14] The present research revealed the effects of three main factors (attitude, ISA, and ISQ) as determinants of information-seeking behaviours of cancer patients on the Internet. In this context, it guides understanding and successfully managing the information-seeking behaviours of today's cancer patients. It also expands the literature on patients' information-seeking behaviours and the factors affecting these behaviours. However, it is possible to state that the study's findings should be evaluated within the framework of certain limitations. As Lwoga et al. stated, advanced-stage patients who could provide crucial information on the subject could be excluded from this research.[9] However, research data were limited to cancer patients receiving chemotherapy treatment in a public hospital. Therefore, it is impossible to predict whether similar patterns will be observed in a larger cancer patient group or individuals living with different diseases and how information needs, or behaviours will change over time. In this context, conducting longitudinal and/or mixed-method studies is recommended to provide a deep definition and explanation of the research context.

Ethics Committee Approval: Our study was approved by the Sakarya University Faculty of Medicine Clinical Research Ethics Committee (Date: 22/07/2020, decision no: E.6607). The study was carried out by the Helsinki Declaration.

Conflict of Interest: No conflict of interest was declared by the authors.

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