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THE RELATIONSHIP BETWEEN CANCER INFORMATION OVERLOAD AND ATTITUDES FOR CANCER SCREENING IN GERIATRIC PATIENTS WHO HAVE HAD SURGICAL PROCEDURE: A CROSS-SECTIONAL STUDY
CERRAHİ İŞLEM UYGULANAN YAŞLI HASTALARDA KANSER BİLGİ YÜKÜ İLE KANSER TARAMALARINA YÖNELİK TUTUMLARI ARASINDAKİ İLİŞKİ: KESİTSEL BİR ÇALIŞMA

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This study aimed to determine the relationship between cancer information overload and attitudes toward cancer screening in elderly patients who underwent surgery. A total of 123 geriatric individuals participated in the cross-sectional study. The mean age of the participants in the study was 70.63±5.81. It was determined that 17.1% of the individuals had cancer, 30.9% had cancer in their first degree relatives, 52% had cancer screening before, and the most common screenings were colonoscopy (23.6%), pap smear (14.6%), and breast self-examination (8.1%). It was determined that the total score averages of the attitude scale for cancer screening of those who obtained information about cancer from the internet/media were significantly lower ($p=0.030$). It was determined that there was a significant moderate negative correlation between cancer information overload and the total scores of the attitude scale for cancer screening ($r=-0.303$, $p=0.001$). To encourage screening in the geriatric population and to prevent the risks of unnecessary screening, arrangements should be made to facilitate access to accurate information.

Keywords: Attitude, cancer, geriatrics, health, information management

ÖZ

Bu çalışmada cerrahi işlem uygulanan yaşlı hastalarda kanser bilgi yükü ile kanser taramalarına yönelik tutumları arasındaki ilişkinin belirlenmesi amaçlandı. Kesitsel tipteki çalışmaya toplam 123 geriyatrik birey katıldı. Araştırmaya katılanların yaş ortalaması 70.63±5.81'dir. Bireylerin %17.1'inin kanser olduğu, %30.9'unun birinci derece akrabalarında kanser olduğu, %52'sinin daha önce kanser taraması yaptırdığı ve en sık yaptırılan taramaların kolonoskopi (%23.6), pap smear (%14.6) ve kendi kendine meme muayenesi (%8.1) olduğu belirlendi. İnternet/medyadan kanser hakkında bilgi edinilenlerin kanser taraması tutum ölçeği toplam puan ortalamalarının anlamlı oranda düşük olduğu belirlendi ($p=0.030$). Kanser bilgi yüklemesi ile kanser tarama tutum ölçeği toplam puanları arasında orta düzeyde negatif yönde anlamlı bir ilişki olduğu belirlendi ($r=-0.303$, $p=0.001$). Geriyatrik popülasyonda taramayı teşvik etmek ve gereksiz tarama risklerini önlemek için doğru bilgiye erişimi kolaylaştıracak düzenlemeler yapılmalıdır.

Anahtar kelimeler: Tutum, kanser, geriyatri, sağlık, bilgi yönetimi

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INTRODUCTION

Cancer continues to be an important problem causing death and disability in all countries (1,2). In the 2020 data of Turkey's "Causes of Death Statistics", it was determined that cancer ranks second among the leading causes of death (3). Cancer, which is a chronic disease, is known to increase in risk and prevalence with age (4). Despite the universal struggle to reduce the rate of cancer, it has been reported that approximately 60% of cancer cases occur in people aged 65 and over (5). Considering that the average life expectancy is prolonged in direct proportion to developing health conditions, it is the predictable situation that the cancer rate among elderly individuals will increase in the coming years. Considering all these, it can be said that elderly patients with cancer have been underrepresented in studies for a long time and more studies are needed.

Although elderly individuals are a high-risk group for cancer, they are also considered to be a very fragile and challenging group in terms of cancer treatment. Early detection of cancer, which is an important problem in the geriatric population, can be life-saving by improving the prognosis of many different types of cancer (6, 7). For these reasons, screening programs have been created all over the world. With the "National Cancer For these reasons, screening Program" in Turkey, screening for breast, cervical and colorectal cancers is carried out within primary health care services (8).

Even if the screening programs carried out by the countries are fully planned, many factors are effective in the target population to have these screenings. Knowledge and attitude about cancer screening are two important factors affecting screening behavior. Along with technological developments, sources of information about cancer (television, radio, newspaper, book, brochures, magazines, internet) have increased (9). With the increase in access to information, people can access cancer information more easily, and the information load increases, and this creates a problem as it increases the risk of receiving misleading information (10,11). While information is an important input in initiating an activity, information overload is an increasingly worrying byproduct of the vast amount of information being produced today. Cancer information overload (CIO) is defined as feeling overwhelmed by the information sources about cancer in the information environment (12). Information overload can cause mental confusion and prevent people from accessing real information (13). It is thought that excessive information, as well as insufficient information, may have effects on scanning attitude and behavior. However, studies on CIO are insufficient and research should be increased. Considering that cognitive functions decrease due to aging, it is important to determine the relationship between CIO and attitude towards screening in the geriatric population. No research has been found in the literature examining attitudes towards CIO and cancer screening in geriatric patients. Therefore, the aim of this study is to determine the relationship between CIO and attitudes towards cancer screening in elderly patients undergoing surgery.

MATERIAL AND METHODS

Study Design

This study had a cross-sectional design and was con-

ducted with 123 patients aged ≥ 65 years who received treatment in the general surgery clinic of a University Hospital within the period from 1 December 2021 to 1 March 2022. The required sample size was estimated using G power 3.1.9.7 program. The effect size in this study was considered to be medium F (0.30) when Cohen's (1998) criteria were used (14). For the simplest in-group and inter-group comparison, the sample size needed is approximately $n=42$ at the $\alpha=0.05$ level and the effect value determined for a statistical power of $p=0.80$ (15). Within the specified period, 128 elderly adult patients applied to the clinic. All of the patients were invited to the study, but five patients refused to participate in the study. A total of 123 elderly individuals participated.

Data Collection

Before applying the forms, the patients were invited by explaining the purpose of the study, and written consent was obtained from those who accepted. The forms were applied face-to-face in approximately 30 minutes by the researchers.

The questionnaire form was developed by the researchers based on the literature (7,10,11,12,16). An 18-question data collection form was used, questioning sociodemographic characteristics, cancer knowledge level, and previous cancer screening experience.

This Attitude Scale for Cancer Screening was developed by Öztürk et al. and the five-point Likert-type scale consisted of 24 items and one dimension (7). The total score that can be obtained from the scale is between 24 and 120. The scale no specific cut-off point was established. Scores near 24 indicate negative attitude, while scores near 120 indicate a positive attitude towards cancer screening. When calculating scores, 13 items with statements of negative meaning (Items 9, 12, 14-24) should be inversely coded. The Cronbach's alpha value was calculated as 0.957 (7). It was determined as 0.89 in this study.

This "Cancer Information Overload (CIO) Scale" was developed by Jensen et al (12). CIO scale consists of 8 items and one dimension. The scale is a 4-point Likert type. The total score that can be obtained from the scale is between 8 and 32. Turkish validity and reliability study was conducted by Inci et al (16). The total Cronbach Alpha value of the scale was determined to be 0.77 (16). It was determined as 0.78 in this study.

Statistical Analysis

The data obtained in the study were evaluated with the Statistical Package for the Social Sciences software (SPSS, version 22.00). Whether the data had a normal distribution was determined by the skewness and kurtosis test. Descriptive statistical analyzes (mean, standard deviation, and percentage) were used to evaluate the data. For comparison of scale scores that did not show normal distribution, the Mann-Whitney-U test was used for two independent groups, and the Kruskal Wallis test was used for more than two groups. For comparison of scale scores that did show normal distribution, the t-test was used for two independent groups, and the one-way analysis of variance (ANOVA) test was used for more than two groups. The relationship between CIO scores and attitude scores for cancer screening was evaluated with Pearson correlation analysis.

The level of the relationship between the variables is weak if the correlation coefficient is between 0-0.29; medium if it is between 0.30-0.64; strong if it is between 0.65-0.84; If it is between 0.85-1, it is interpreted as very strong (17). $p < 0.05$ was considered statistically significant.

Ethical Consideration

Before the study, written permission was obtained from the local ethics committee of the relevant university (Decision No: 2021-11/06) and the hospital management. The study was conducted in accordance with the Declaration of Helsinki, written informed consent was obtained from the patients.

RESULTS

The mean patient age was 70.63 ± 5.81 (± 5.71) years. Of all the patients %50.4 were female, 66.7% were mar-

ried, 33.3% were high school graduates, 48.8% were retired workers, 55.3% had income lower than their expenses, and 74.8% had social security. Of all the patients 54.5% smoked and 13.8% alcohol use at any period of life, 74.8% did not regularly exercise in daily life, 65% did not choose healthy foods in their diet, and 72.4% had a chronic disease. It was determined that 17.1% of patients had cancer in themselves, 30.9% had cancer in their first-degree relatives, 52% had cancer screening before, and the most common screenings were colonoscopy (23.6%), Pap smear (14.6%), Breast self-exam (BSE) (8.1%). Of all the patients 55.3% had previously received information about cancer screenings, 73.5% of this information was obtained from health personnel, and 26.5% through the media/internet (Table I).

Table I: Patients' descriptive characteristics (n=123)

Descriptive Characteristics		Mean \pm Sd	
Mean age (years)		70.63 \pm 5.81	
		n	%
Gender	Female	62	50.4
	Male	61	49.6
Marital Status	Married	82	66.7
	Single	15	12.2
	Spouse passed away/Divorced	26	21.1
	Literacy	11	8.9
Education Status	Primary school	37	30.1
	Secondary school	10	8.1
	High school	41	33.3
	University	24	19.5
Occupation	Housewife	40	32.5
	Retired worker	60	48.8
Income	Civil servant retired	23	18.7
	Lower than expenses	68	55.3
	Equal to expenses	55	44.7
Social security presence	Yes	92	74.8
	No	31	25.2
Smoking at any period of life	Yes	67	54.5
	No	56	45.5
Alcohol use at any period of life	Yes	17	13.8
	No	106	86.2
Regularly exercise status in daily life	Yes	31	25.2
	No	92	74.8
The state of choosing healthy foods in their diet	Yes	43	35.0
	No	80	65.0
Chronic disease status	Yes	89	72.4
	No	34	27.6
	DM	39	43.8
	HT	21	23.6
Type of chronic illness	Thyroid diseases	8	9.0
	Asthma	6	6.7
	COPD	15	16.9
Presence of cancer in themselves	Yes	21	17.1
	No	102	82.9
Presence of cancer in first degree relatives	Yes	38	30.9
	No	85	69.1
	None	59	48.0
Previously screened for cancer	BSE	10	8.1
	CBE	4	3.3
	Mammography	3	2.4
	Pap smear	18	14.6
	Colonoscopy	29	23.6
Status of receiving cancer screening information before	Prostate cancer	0	0
	Lung cancer	0	0
	Yes	68	55.3
Source of cancer information	No	55	44.7
	Health Professional	50	73.5
	Media/internet	18	26.5

BSE: Breast self-exam, CBE: Clinical breast examination, HT: Hypertension, DM: Diabetes mellitus, COPD: Chronic obstructive pulmonary disease

Table II shows the comparisons of the characteristics of patients with their attitudes toward cancer screening and CIO. A significant difference was found between age, income status, smoking, presence of chronic disease, presence of cancer in the first-degree relative, previous use of cancer screening test, obtaining information about the cancer screening test, where she/he got this information and the total score of the attitude scale for cancer screening ($p < 0.05$). It was determined that there was a significant difference between age, marital status, occupation, income status, presence of chronic disease, presence of cancer in themselves, previous use of cancer screening tests, the status of getting information about cancer screening tests, and the total score of the CIO scale ($p < 0.05$). The total mean score of the attitude scale for cancer screening was 84.42 ± 11.58

and the total mean score of the CIO scale was 21.32 ± 4.99 (Table III).

In table IV, there is a correlation analysis showing the relationship between attitudes toward cancer screening and CIO. It was determined that there was a significant negative correlation between CIO and the total scores of the attitude scale for cancer screening ($r = -0.303$, $p = 0.001$).

DISCUSSION

In this study, it was determined that there was a significant difference between age and geriatric individuals' CIO scores, and attitudes toward cancer screening. According to this result, the CIO scores and negative attitudes toward cancer screening increase with age. In studies conducted with elderly individuals, it has been determined that the increase in age affects the cancer

Table II: Comparisons of the characteristics of patients with their total score mean of attitudes for cancer screening and cancer information overload (n=123)

Descriptive Characteristics	Attitude scale for cancer screening total score mean			Cancer information overload total score mean	
		Mean ±Sd	p	Mean ±Sd	p
Gender	Female	85.34±12.29	0.379 ^c	21.88±4.67	0.210 ^c
	Male	83.49±10.82		20.75±5.28	
Age (years)	65-74	86.73±11.46	0.001^{c*}	21.14±5.38	0.019^c
	75-85	77.84±9.27		21.84±3.69	
Marital status	Married	85.21±10.82	0.262 ^b	22.00±4.73	0.030^b
	Single	86.33±15.38		17.33±6.10	
	Spouse passed away/Divorced	80.85±11.19		21.50±4.17	
	Literacy	83.45±4.20		21.54±0.52	
Education status	Primary school	82.49±9.42	0.905 ^b	22.24±5.06	0.153 ^b
	Secondary school	85.80±14.47		22.10±5.45	
	High school	84.54±11.51		21.46±3.97	
	University	87.08±15.42		19.25±6.86	
Occupation	Housewife	86.37±11.33	0.111 ^b	21.47±4.11	0.047^b
	Retired worker	82.07±9.47		22.00±4.23	
Income	Civil servant retired	87.17±15.68	0.001^{c*}	19.30±7.41	0.016^c
	Lower than expenses	87.91±12.65		20.38±5.49	
Social security presence	Equal to expenses	80.10±8.37	0.888 ^c	22.49±4.07	0.964 ^c
	Yes	84.34±10.89		21.34±5.13	
Smoking at any period of life	No	84.68±13.59	0.037^a	21.29±4.66	0.072 ^a
	Yes	82.83±11.46		20.70±5.28	
Alcohol use at any period of life	No	86.32±11.54	0.895 ^a	22.07±4.57	0.519 ^a
	Yes	83.35±6.27		19.12±5.74	
Regularly exercise status in daily life	No	84.59±12.23	0.259 ^c	21.68±4.80	0.200 ^c
	Yes	82.38±10.08		22.32±3.65	
The state of choosing healthy foods in their diet	No	85.11±12.02	0.165 ^c	20.99±5.34	0.407 ^c
	Yes	82.44±12.89		21.84±4.91	
Chronic disease status	No	85.49±10.74	0.035^c	21.05±5.04	0.017^c
	Yes	83.07±10.92		21.79±4.46	
Presence of cancer in themselves	No	87.97±12.64	0.790 ^a	20.09±6.09	0.032^a
	Yes	84.29±11.07		23.43±5.62	
Presence of cancer in first degree relatives	No	84.45±11.73	0.044^a	20.89±4.77	0.773 ^a
	Yes	85.55±7.71		21.29±3.34	
	None	83.92±12.95		21.34±5.59	
	BSE	82.00±12.04		20.36±5.04	
Previously screened for cancer	BSE	86.60±7.50	0.013^b	22.30±0.95	0.005^{b*}
	CBE	92.25±15.95		18.50±3.11	
	Mammography	83.90±5.50		16.33±1.54	
	Pap smear	85.44±11.62		22.22±5.49	
Status of receiving cancer screening information before	Colonoscopy	84.31±8.15	0.031 ^c	23.31±5.07	0.008^{c*}
	Yes	86.44±10.52		22.39±4.63	
Source of cancer information	No	81.93±12.41	0.030^a	20.00±5.15	0.134 ^a
	Health Professional	87.80±10.37		21.28±4.63	
	Media/internet	82.67±10.28		2.80±4.57	

Bold values indicate significant associations ($p < 0.05$). * $p < 0.01$ a:Mann-Whitney U, b:Kruskal-Wallis, c:t-test*

Table III: Scale total score averages (n=123)

	Mean±SD	Min-Max
Attitude scale for cancer screening total score	84.42±11.58	62-113
Cancer information overload total score	21.32±4.99	12-32

Table IV: Correlation of attitudes for cancer screening and cancer information burden scale total score

		Attitude scale for cancer screening total score	Cancer information overload total score
Attitude scale for cancer screening total score	r	1	-0.303*
	p		0.001
	r	-0.303*	1
Cancer information overload total score	p	0.001	

screening attitude negatively (5) and some elderly individuals believe that they would not live long enough to benefit from cancer screening tests (18). In a qualitative study conducted with elderly individuals, it was determined that the increase in age was associated with negative cancer screening attitudes and the decision to quit scanning (19). Similarly, studies have reported that CIO increases with age, and that age is a risk factor for CIO (15,20,21). Modern communication technologies create, reproduce and disseminate health information rapidly. The ever-increasing volume of accessible health information and proliferation of information channels may have increased the CIO, particularly in the geriatric population, whose cognitive abilities to comprehend information decline with age. As the CIO increases, it can be said that the anxiety and confusion experienced negatively affect the attitudes toward cancer screening of elderly individuals. The result of the correlation analysis conducted in our study also supports this situation. In this study, it was determined that there is a negative and significant relationship between CIO and the total scores on the attitude scale for cancer screening. In similar studies, it has been determined that as CIO increases, people's health information seeking activities are negatively affected (15), they avoid cancer-related information, and their health-protective and preventive behaviors are considerably reduced (12,13,22). The information overload model (IOM) postulates that individuals with dispositional overload for a particular type of content will attack, disregard, and/or avoid that content over time (23). The literature knowledge on the information overload of geriatric individuals in society is limited. In this respect, the results of our study provide new information to the literature.

As the age exceeds, the increase in the risk of cancer may influence the information need of individuals positively. However, the source of the information obtained is very important (24). In this study, it was found that the total score of the attitude scale for cancer screening of the elderly, who received information about cancer from health professionals, was significantly higher and the average score of CIO was lower. For this reason, according to the results of this study, it can be said that the information obtained from sources such as the media and the internet increases the information load of elderly individuals and negatively affects their attitudes toward cancer screening. Today, technological developments allow people easier access to more

cancer information while also increasing their risk of receiving misleading information. In a study, it was reported that the CIO score of individuals who obtained health information from the internet increased (10). In other studies, it has been determined that the increased CIO score due to information obtained from wrong sources negatively affects the protective behaviors of people towards cancer and their screening decisions (12,25). This may have resulted from the lack of health literacy, which refers to the degree to which older individuals have the capacity to acquire, process, and understand basic health information and services. Indeed, in a study, it was reported that the level of health literacy was low in older adult patients (26). Where the information is obtained from is important, but this issue has not yet been clarified. Public libraries, community health centers, family health centers, or online information gathering environments specific to the geriatric population can be created to facilitate access to accurate information.

Participation of individuals in screening is affected by many factors such as socio-demographic factors (age, education, marital status, income status, etc.), personal attitudes, beliefs, information levels, access to health institutions, and social support resources (27,28). In this study, it was determined that the CIO scores of housewives and retired workers were significantly higher compared to the elderly people who are retired, civil servants. This may be due to the wrong information acquired by housewives, especially because they spend more time in areas such as television and the internet. Furthermore, it was determined in the study that the education level of housewives and retired workers was lower than those who were retired civil servants. Indeed, in this study, it was found that while the average score of attitudes for cancer screening was lower in individuals with a low level of education, their CIO scores were higher. In studies similar to our study, it was stated that there was a significant correlation between CIO and education level (10,29). In addition, in this study, it was determined that geriatric individuals with a lower income than their expenses had a low CIO average score and a higher attitude scale score for cancer screening. Contrary to this study, in a study conducted, it was determined that the CIO scores are higher in individuals with low income (10). In the study, it was determined that the elderly with low-income levels

mostly obtained information about cancer from a health professional. The difference with the literature information may be due to this. The limited technology or internet access of individuals with low income in Turkey may have reduced the diversity of information sources. In a study conducted by Ramanadhan and Viswanath, the result that those who do not seek health information have a lower education level and income supports this view (30). It was found that geriatric patients with chronic diseases had a higher CIO, and the attitude for the cancer screening scale means the score was lower, which was statistically significant. Studies have shown that individuals with health problems are generally more motivated to seek and find health information (31), there is an increase in information load (10) and they do not want to continue cancer screening (18). In addition, in this study, the CIO of elderly individuals diagnosed with cancer increased statistically significantly. Cancer or other chronic diseases are a concern for every individual. It is thought that being diagnosed with cancer will cause individuals to seek more information and increase their information load. It has been determined in studies that individuals who are worried about their health search more for health-related information on the internet (online) (15,31,32). American Medical Association, on the other hand, stated that groups with the highest prevalence of chronic disease and the greatest need for health care experience more difficulty reading and understanding the medical information (33). In another study, they stated that individuals with high cancer anxiety paid more attention to their health information and had worse information-seeking experiences (34). This increased information-seeking effort can cause CIO in individuals, leading to confusion, fear, anxiety, stress, and uncertainty. Studies have shown that fear is also effective in acquiring information and that people will prefer to avoid information to cope with information that creates fear (35,36). In accessing information, the ability to correctly understand the information obtained and evaluate the quality of the information is as important as the advances in health information technologies. However, especially elderly individuals are weak in understanding and integrating information by evaluating the quality of information, and this situation worsens with chronic disease (37). Other studies have shown that elderly individuals do not know about cancer screenings, the symptoms are related to aging rather than cancer, they do not need to be screened without symptoms, they feel shame and fear about the outcome, they feel pessimistic, and the belief that it is not worthwhile to receive medical treatment to fight cancer at their age, it was determined that cancer screenings were avoided (5,38).

In this study, it was determined that the rate of those who had cancer screening was lower than those who did not. In the study, it was found that the most frequent screenings of elderly individuals were the screening tests for breast, cervix, and colon cancer, which are included in the screening program of the Turkish Ministry of Health and which are made free of charge. However, it was determined that none of the elderly individuals participating in this study had been screened for prostate and lung cancer. This may be because prostate and lung cancer screenings are not included in the routine

screening program in Turkey. As a result, it can be said that the knowledge and awareness of these scans are insufficient. In similar studies, it has been determined that elderly individuals lack information about screening for lung (39) and prostate cancer (5) and they do not have screenings for these cancers. However, it has been reported that the incidence of the lung cancer is high in elderly individuals over 65 years of age and this incidence increases significantly with age (40). It can be said that there is a need for awareness programs about lung and prostate cancers, the frequency of which is increasing in the geriatric population.

CONCLUSION

In conclusion, CIO is an important research topic as it negatively affects attitudes towards cancer screening. The number of elderly patients with cancer is increasing, and to face this progressive and inevitable phenomenon, strategies should be developed to increase early detection by increasing participation in screening programs before cancer appears. In this study, it was determined that as the CIO score increased, the attitude towards screening decreased significantly. This study revealed the importance of obtaining information about cancer from health professionals. Additional awareness campaigns about screening recommendations and risks should be organized to facilitate older adults' access to accurate information, to not only encourage screening but also prevent the risks posed by unnecessary screenings in the geriatric population. Studies involving appropriate interventions should be planned by examining the factors causing overload among cancer information seekers and with an interdisciplinary perspective on groups at risk.

Limitations and Strengths

The strength of this study is that it is the first study to investigate the relationship between CIO, and attitudes toward cancer screening in geriatric patients. Also the results of this study reveal the importance for elderly individuals to obtain information about cancer from health professionals. On the contrary, this study had several limitations which included but were not limited to the following. Firstly, the study was conducted only in one center, the study was completed with a limited number of patients, and the data collection process was carried out between certain dates; therefore, the results might not be generalized to other geographic regions. Secondly, the selected patients were non-homogeneously distributed in terms of some characteristics such as educational and marital status.

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Conflict of Interest

No conflict of interest has been declared by the author (s)

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