

## Studying the Correlation Between Demographics Variables and the Health Information-Seeking Behavior of Patients With Cancer

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**Introduction:** Information is a vital requirement like other human vital needs. One of the information every patient needs is about the health and ways of preventing diseases and information for their treatment. The purpose of this study was to investigate the hypothesis that there is no significant correlation among demographics variables and the health information-seeking behavior of patients with cancer in Shahid Bahonar Hospital and Javad Al-Aemeh clinic in Kerman during the academic year 2017-2018.

**Methods:** The research method was descriptive and the data were collected through Lango's information-seeking behavior questionnaire. To investigate the research hypotheses, independent statistical methods and one-way ANOVA were used.

**Results:** The results showed that younger patients seek health information through electronic resources as compared with other patients. Male patients were more actively receiving their health information than females, and female patients were receiving their health information through interpersonal interaction. High-educated and wealthy patients in capital cities received their health information actively on the Internet; while patients with poor-quality living standards received their health information inactively through physicians and interpersonal interaction.

**Conclusions:** According to our research results, there was a significant relationship among demographic variables and people with cancer information-seeking behavior.

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## INTRODUCTION

Research in the field of information-seeking behavior is based on factors that might have an impact on people's social behavior. These elements comprise information literacy, disciplinary area, academics role, and the impact of the availability of various kinds of information resources [1]. Health information-seeking behaviors include diagnosis of health information needs, selecting health information resources like print sources, electronic sources, physicians, friends, advisors, and media

like TV, radio, social media, searching and finding information sources, extracting and collecting health information and the most importantly applying the information to prevent diseases and curing them [2]. Health information-seeking is inactive when patients, despite the vast amount of information available, do not use it, and that information has no effect on the treatment of their illness. When patients think that they have enough information being received from their surroundings, do not search for

extra information because of personal, economic, social, and cultural problems. They do not take the information seriously and as an essential need so that they believe that the information that their physicians give them as well as their surroundings' information is enough and they don't even ask their doctors for complementary data. Health information-seeking is active, when patients take information as seriously as their other vital needs, search, retrieve it from reliable resources, and most important of all, use it for solving their problems and treating their illness. Patients who are active in health information-seeking, ask a lot of questions and search for answers to their questions from reputable sources, know the sources, use retrieval methods to search, and understand the keywords which are used for seeking the information.

When the patients are diagnosed with cancer, they do not like to ask questions about the various treatment choices that were suggested to them [3]. There are three main fields behind the health information-seeking field: coping with illness; involvement in medicinal decisions; and preventing the illness [4]. Houston and Allison found that users' health conditions are related to health information-seeking behavior [5]. Information use is a prerequisite for the users' health and improvement of humankind's future [6]. Patients choose two ways for their health care: seeking information from different resources actively or deciding on using medical services for their treatment [7]. Searching health information via the Internet and social media is a useful method for obtaining information for curing the diseases [8]. Health information-seeking behavior is an essential part of people's needs for diagnosis of personal health [9]. Information-seeking behavior of patients with cancer and its role in self-care is so important that numerous studies have been done worldwide in this field. Adults who are diagnosed with cancer, search for a lot of health information, and female adults with cancer search health information more than males and they tend to search their required information from health care practitioners [10]. Chou et al., found that young, high-educated, non-Hispanic white race, residents of cities, and self-managed people access to their required information through the Internet [11]. Kim and Kwon found that age, gender, education, employment status, health insurance, and membership in online support groups

are factors that affect information-seeking behavior of patients with cancer differently [12]. Lashkarizadeh et al., found that men were more interested in understanding the diagnosis of the disease more than women [13]. Jaafar et al., found that patients' health behavior affects their information behavior, and its impact on women is more than men and younger seek information more actively [14]. Jung's findings showed that the highly educated and patients who are familiar with cancer, seek information because they were motivated to the medical profession [15]. The patients who experience low socioeconomic conditions seek information less frequently. A higher social class is a positive predictor of health information-seeking on the Internet [16]. According to McCloud et al., young female patients with cancer and a lower income have problems to access the right information [17]. Racial/ethnic minorities, older people, and those who have a lower income and live in rural areas have less access to the Internet and English-proficiency so that increasing levels of education are significantly related to online health information-seeking [18]. According to Blanch-Hartigan et al., there is no significant relationship between social factors and the use of information resources [19]. McCloud et al., findings showed that most of the young adults access to various types of old and social media platforms [20]. According to Petty there are significant differences in health information-seeking behavior and status, age, and gender of patients [21]. Jacobs et al., findings revealed that health information's accessibility through the web is not equal for all and especially among the old, low income, minimal education, and special ethnicities people [22]. Kimiafar et al., concluded that the quality of the information provided to patients could improve their disease [23]. Younger people with higher education and higher incomes are seeking health information from the Internet [24].

In this study, health information-seeking behavior was studied in four dimensions of information reception, information sources, and information impact on patients' behavior, perception, and interpersonal interaction with different components for each dimension. Considering the importance of information on different aspects of people's lives, especially patients with cancer, and the role that information plays in improving their health and

quality of life, the information behavior of patients with cancer has not been taken into account seriously in Iran. More studies are required in this field. The results of this research would be available to patients with cancer, treatment centers, cancer treatment clinics, information centers, and physicians. The present study follows an interdisciplinary approach and was carried out with the cooperation of an oncologist from the Kerman University of Medical Sciences in Iran. The main propose of this study is to investigate the hypothesis that there is no significant relationship among demographics variables of cancer patients and their health information-seeking behavior.

## METHODS

A descriptive research method is used for studying this research. Longo's questionnaire with five points Likert Scale was used as a standard for investigating information-seeking behavior of patients with cancer which was used by Farashbandi et al., and Longo [25, 26]. Cronbach's alpha test was used to obtain the reliability of the questionnaire. The calculated alpha value was more than 0.7, so the reliability of the questionnaire was also verified. To evaluate the validity of the research tool, formal validity was used. The specialists shared their opinion on the questions in five options according to the Likert scale, and received responses were in a proper and quite distinct range; therefore, content and construct validity were confirmed by them. For this study, there were about 3,000 patients who were being treated. Morgan table with a possible drop was applied and 400 people were randomly selected as the research sample size. From 400 patients with cancer 350 of them responded to the questionnaire. The researcher selected the patients from Shahid Bahonar hospital and Javad Al-Aeme clinic. The questionnaires were distributed by the researcher among the selected patients. The researcher read the questions to patients who were unable to read the questionnaire and verbally answered the questions. In this way the researcher marked options to which patients responded. In the case of patients who were accompanied by a hygienic care provider, their care provider answered the set questions. Data were collected during three weeks and for testing research hypotheses, independent statistical methods, and one-way ANOVA were used and data were analyzed

by SPSS software version 21.

## RESULTS

### First Hypothesis

The results of the present study showed that there was a significant difference between men and women in terms of behavior variables, perception and interpersonal interaction in information seeking, information sources, active and inactive information reception ( $P<0.05$ ). Research results showed that there was a significant difference in behavior variables in information search, understanding keywords in information search, interpersonal interaction in information search, information resources, and effect of used information in their disease. Active information retrieval and inactive retrieval of information between men and women were different ( $P<0.05$ ). Male patients received more information through formal searching for information (3.40), understanding keywords of information searching (3.21 and selecting related information resources 2.94) more than active and inactive information-seeking in females. Women received more information than men through interpersonal interactions (5.05) and there was no significant difference in the variability of the effect of used information on their disease between men and women ( $P<0.05$ ).

### Second Hypothesis

The results of the research showed that there was a significant difference between the age groups in terms of behavior variables in information seeking, interpersonal interaction in information seeking, and inactive information reception ( $P<0.05$ ). Findings of the present study showed that patients in the 30-40 age group (3.29) used formal information searching behavior for receiving information more frequently than patients in the 41-50 age group (2.72). There was no significant difference between 30-40 and 51-60 age groups in formal information searching for receiving information. There was no significant difference between the 31-40 (3.07) and 41-50 age groups (3.02) as well as in understanding the concepts of searching for information. Between these two age groups and the 51-60 age groups the difference was a bit considerable. The 41-50 age group (3.14) used interpersonal interactions more than the 30-40 age group (2.92) and 51-60 age group

s(2.82) in terms of receiving information. There was no significant difference among these three age groups in using information resources for receiving the needed information and using the information for their disease. There was no significant difference among all the age groups in the ways for seeking information actively and inactively.

### **Third Hypothesis**

The results of the present study showed that there was a significant difference between education ranks in terms of behavior variables, perception and interpersonal interaction in information seeking, information sources, as well as active and inactive information reception ( $P < 0.05$ ). According to research findings, postgraduate people like those having Master's (4.16) and Ph.D. (4.06) searched information formally as compared with people with lower degrees for receiving information. Individuals with postgraduate degrees like Ph.D. (3.66) and Master's (3.26) also better understood information search concepts for receiving information compared with other educational groups. Undergraduates (30.11) understood information search concepts for receiving information more than those having a diploma. Those with an under-diploma (3.40) and diploma (3.31) degree used interpersonal interactions more than undergraduated (2.40) and postgraduated like patients having a PhD (2.75) and Master's (2.40) degree for receiving their needed information. Postgraduates like individuals with a Ph.D. (3.13) and Master's (3.10) degree more than undergraduates (2.98) and those with a diploma (2.65) and under-diploma (2.59) degree received information through information resources. There was no difference in using their obtained information in treating their disease among 5 educational groups. There was a significant difference among educational groups in the ways of receiving information either actively or inactively. In the inactive way, people with Ph.D. (3.39), and Master's (3.41) degree as well as undergraduates (3.29) received information more than those with a diploma and under-diploma degrees. Similar results were obtained in the active way for individuals with Ph.D. (3.61) and Master's (3.53) degree and undergraduates (3.35).

### **Fourth Hypothesis**

The results of the research showed that there is a

significant difference between living standards in terms of behavior variables, perception, interpersonal interactions, information-seeking behaviors, information sources, as well as active and inactive information reception ( $P < 0.05$ ). The findings of the present study showed that patients with excellent (4.08) and good lifestyles (3.76) received their information through formal information searching more than those with moderate (3) and low lifestyles (2.38). It was observed that patients with high (3.72) and good lifestyles (3.21) also received their information; using understandable information search keywords more than those with moderate and low lifestyles. People with a low lifestyle (3.21) received their information through interpersonal interactions more than patients with high (2.72), good (2.82), and moderate (2.96) lifestyles. Patients with a high lifestyle (3.15) used information resources for receiving their information more than the other three lifestyles. There was no significant difference in using the information in patients with different lifestyles. Findings showed that patients with high (3.67) and good (3.41) lifestyles received their needed information in active and inactive ways more than patients with moderate and low lifestyle.

### **Fifth Hypothesis**

The results of the present study showed that there was a significant difference between living space in terms of behavior variables, perception, and interpersonal interaction in information-seeking, information sources, active and inactive information reception ( $P < 0.05$ ). Findings also showed that patients who live in the city center (4.10) received their information through formal information searching more than the patients who lived in rural places (1.78) and countrysides (3.066). Patients who lived in the city center (3.52) received their information through understanding information search keywords more than patients who lived in the countrysides and villages. Patients who lived in villages (3.42) received their information through interpersonal interactions more than people who lived in the city center (2.76) and countrysides (2.92). Patients in the city center (3.12) received their information through information resources more than those living in the countrysides (2.87) and villages (2.57). There was no significant difference in using information and its effect on their disease in



the living space of patients. In both active (3.54) and inactive (3.42) ways patients who lived in the city center received more information than people who live in the countryside and villages.

**DISCUSSION**

The findings of Table 1 show that there was no significant correlation between the gender of cancer patients and their health information-seeking behavior in patients living in Kerman. It is concluded that behavior variables, like perception and interpersonal interaction in information-seeking, information sources, active and inactive information reception among men and women are significantly different. The probable reason for this can be that women have more communication with their friends. It can be because of the sensitivity and curiosity of women. Probably, women refer to a specialist and other patients who were previously diagnosed with cancer just after being diagnosed with cancer and this happens before seeking information resources for finding the research results about the cancer treatment methods. Our findings are in line with those of Lashkarzadeh, Kim Kwon, and McCloud et al., [12, 13, 17]. Perhaps the difference between our research findings and those of Adjei et al., can be due to the low number of men who have been diagnosed with cancer [10]. Also, in the research of Adjei et al., the number of women who were included in the research as the statistical society was much more than men [10]. The findings of Table 2 show that the second hypothesis was rejected and there was no significant correlation between the age of patients with cancer and health information-seeking behavior in patients with cancer in Kerman. It also suggests that there was a significant difference in the age group, behavior variables, perception, the source of information, as well as active and inactive information reception. According to the descriptive data of the table, the average number of patients was found in the age group of 30-40 years and younger people more than others looked for information about their illness and received information both actively and inactively. This is probably because people of a younger-age use more information sources and information technologies and the younger generation find most of their information through social networks. However, older people seem to prefer to search information through interpersonal

interactions as they might lack digital information literacy. Adjei et al., findings differ from the findings of this research [10]. According to them, adults with cancer searched health information more than young patients, but the findings of two other studies were in line with our findings [17, 20].

**Table 1:** Difference Between Health Information-Seeking Behavior and Gender Means

	Frequency	Mean	t-Value	P Value
<b>Information Searching</b>			3.918	0.001
Female	131	3.40		
Male	219	2.86		
<b>Information-Seeking Understanding</b>			3.164	0.002
Female	131	3.21		
Male	219	2.91		
<b>Interpersonal Interactions in Information Seeking</b>			-1.99	0.047
Female	131	2.88		
Male	219	3.05		
<b>Information Sources</b>			2.125	0.034
Female	131	2.94		
Male	219	2.84		
<b>Information Uses for Curing</b>			-1.144	0.253
Female	131	2.83		
Male	219	2.89		
<b>Search, Find and Use the Information Actively</b>			3.065	0.002
Female	131	3.34		
Male	219	3.17		
<b>Search, Find and Use the Information Inactively</b>			2.159	0.032
Female	131	3.22		
Male	219	3.06		

The findings of Table 3 show that there was no significant correlation between the education of patients with cancer and health information-seeking behavior in patients with cancer. However, the descriptive data of findings showed that there was a significant difference in the behavior variables, perception, interpersonal interaction in information-seeking behavior, information sources, as well as

active and inactive information reception between educational groups. The probable possible reason could be the lack of information-seeking skills in people with cancer, such as searching, retrieving, evaluating, and using their findings. This is in line with the findings of Chou et al., Kim et al., Lashkarzadeh et al., Jung et al., and Blanch-

**Table 2:** Difference Between Health Information-Seeking Behavior and Age Groups Means

	Frequency	Mean	t-Value	P Value
<b>Information Searching Behaviour</b>			7.421	0.001
30-40	157	3.29		
41-50	130	2.72		
51-66	63	3.17		
<b>Information Seeking Understanding</b>			0.935	0.394
30-40	157	3.07		
41-50	130	3.02		
51-66	63	2.90		
<b>Interpersonal Interactions in Information Seeking</b>			5.143	0.006
30-40	157	2.92		
41-50	130	3.14		
51-66	63	2.82		
<b>Information Sources</b>			0.805	0.448
30-40	157	2.91		
41-50	130	2.84		
51-66	63	2.87		
<b>Information Uses for Curing</b>			0.542	0.582
30-40	157	2.86		
41-50	130	2.89		
51-66	63	2.83		
<b>Search, Find and Use the Information Actively</b>			1.525	0.219
30-40	157	3.28		
41-50	130	3.18		
51-66	63	3.23		
<b>Search, Find and Use the Information Inactively</b>			4.074	0.018
30-40	157	3.24		
41-50	130	3.00		
51-66	63	3.11		

Hartigan et al., [11-13, 15, 19]. The findings of Table 4 show that there was a significant difference in the patients' life standards in information-seeking, interpersonal interaction in information-seeking, information sources, as well as active and inactive access to the information. This rejects the fourth hypothesis, and the descriptive data showed that there was a significant connection between life standards and health information-seeking behavior. Patients with a high standard of life had the highest average percentage of behavior and perception in information-seeking, active and inactive reception, and information sources; while patients with a low standard of life had the lower average percentages and interpersonal interactions. This probably means that patients with a high standard of living had more access to libraries, subject librarians, information sources, and information technologies. Their information knowledge seems to be high and active. So they access information by searching the internet and social networks but patients with a low standard of life may lack access to libraries, subject librarians, information sources, and information technologies. This subgroup searched their health information inactively and access to their needed information through interpersonal interactions. So, people with a better socioeconomic standard of life who access to high-quality education, actively search for health information in comparison with those who have a lower standard of life. This is in line with the study of Jafar et al., Laura et al., McCloud et al., and Nguyen et al., [14, 16-18].

The findings of Table 5 reject the fifth hypothesis that correlates the cancer patients' living space and health information-seeking behavior. The findings showed that there was a significant difference between behavior variables, perception, and interpersonal interaction in information-seeking, information resources, as well as the active and inactive information reception with the living space. This is probably because patients who live in the capital cities might have more access to libraries, information specialists, information resources, and technologies. Only 2.76% of patients searched information through interpersonal interactions which could be because these patients had access to libraries, subject librarian, and formal information sources so that they did not need to interact with other people to receive health information. On the contrary, 3.42%

**Table 3:** Difference Between Health Information-Seeking Behavior and Education Groups Means

	Frequency	Mean	t-Value	P Value
<b>Information Searching Behavior</b>			137.598	0.001
Under Diploma	68	1.77		
Diploma	71	1.87		
B.A	117	3.67		
M.A.	59	4.16		
Ph.D	35	4.06		
<b>Information-Seeking Understanding</b>			22.718	0.001
Under Diploma	68	2.71		
Diploma	71	2.51		
B.A	117	3.11		
M.A.	59	3.45		
Ph.D	35	3.66		
<b>Interpersonal Interactions in Information Seeking</b>			16.371	0.001
Under Diploma	68	3.40		
Diploma	71	3.31		
B.A	117	2.76		
M.A.	59	2.40		
Ph.D.	35	2.75		
<b>Information Sources</b>			26.011	0.001
Under Diploma	68	2.59		
Diploma	71	2.65		
B.A	117	2.98		
M.A.	59	3.10		
Ph.D.	35	3.13		
<b>Information Uses for Curing</b>			0.892	0.469
Under Diploma	68	2.94		
Diploma	71	2.89		
B.A	117	2.82		
M.A.	59	2.86		
Ph.D	35	2.85		
<b>Search, Find and Use the Information Actively</b>			30.749	0.001
Under Diploma	68	2.92		
Diploma	71	2.92		
B.A	117	3.35		
M.A.	59	3.53		

<b>Ph.D.</b>	35	3.61
<b>Search, Find and Use the Information Inactively</b>	16.881	0.001
<b>Under Diploma</b>	68	2.82
<b>Diploma</b>	71	2.76
<b>B.A</b>	117	3.29
<b>M.A.</b>	59	3.41
<b>Ph.D</b>	35	3.39

of the patients who lived in the village received their health information through interpersonal interaction. This could be because they did not have access to libraries, subject librarians, information resources, as well as an Internet and social networks. So, their awareness of medical databases and information sources was low and they considered physicians as the most reliable source of information and received their health information from physicians and nurses whom they trust as authoritative. Our findings were in line with those of Ingelfinger et al., Adjei Boakye et al., Jacobs et al., Kimiafar et al., and Xiao et al., [3, 10, 22-24]. Being as an information professional and librarian who was diagnosed with breast cancer, received chemotherapy and radiation, researcher experiences show that information literate and skilled in information-seeking behavior could enhance self-awareness, active information-seeking, awareness of how to find information about the disease or the required healthy nutrition, the ability to deal with the disease psychologically, the cancer medicines varieties, and different types of cancers. This also shows that an information literate person knows how to access medicines, how to treat and use information, and is generally knowledgeable about disease information management, as addressed in this study. These competencies of librarians could help patients to experience an easy treatment and might experience fewer side effects related to chemotherapy and radiotherapy.

According to our findings, most of the cancer patients participating in this study obtained their health information from their medical doctors through interpersonal interactions. Therefore, it is recommended to provide disease control, disease management, and treatment procedures brochures besides those containing nutritional information to reduce the anxiety of cancer patients. Subject librarians should provide

**Table 4:** Difference Between Health Information-Seeking Behavior and Life Standards Means

	Frequency	Mean	t-Value	P Value
<b>Information Searching Behaviour</b>			25.669	0.001
Weak	99	2.38		
Mid	157	3.00		
Well	65	3.76		
Excellent	29	4.08		
<b>Information-Seeking Understanding</b>			10.542	0.001
Weak	99	2.92		
Mid	157	2.88		
Well	65	3.21		
Excellent	29	3.72		
<b>Interpersonal Interactions in Information Seeking</b>			5.554	0.001
Weak	99	3.21		
Mid	157	2.96		
Well	65	2.82		
Excellent	29	2.72		
<b>Information Sources</b>			9.037	0.001
Weak	99	2.73		
Mid	157	2.88		
Well	65	2.97		
Excellent	29	3.15		
<b>Information Uses for Curing</b>			0.724	0.538
Weak	99	2.89		
Mid	157	2.87		
Well	65	2.80		
Excellent	29	2.90		
<b>Search, Find and Use the Information Actively</b>			14.533	0.001
Weak	99	3.06		
Mid	157	3.19		
Well	65	3.41		
Excellent	29	3.67		
<b>Search, Find and Use the Information Inactively</b>			7.665	0.001
Weak	99	2.98		
Mid	157	3.05		
Well	65	3.41		
Excellent	29	3.38		

**Table 5:** Difference Between Health Information-Seeking Behavior and Living Space Means

	Frequency	Mean	t-Value	P Value
<b>Information Searching Behaviour</b>			100.143	0.001
Village	73	1.78		
Town	188	3.06		
Kerman City	89	4.10		
<b>Information-Seeking Understanding</b>			25.957	0.001
Village	73	2.69		
Town	188	2.92		
Kerman City	89	3.52		
<b>Interpersonal Interactions in Information Seeking</b>			18.228	0.001
Village	73	3.43		
Town	188	2.92		
Kerman City	89	2.76		
<b>Information Sources</b>			36.271	0.001
Village	73	2.58		
Town	188	2.87		
Kerman City	89	3.12		
<b>Information Uses for Curing</b>			1.670	0.190
Village	73	2.94		
Town	188	2.84		
Kerman City	89	2.86		
<b>Search, Find and Use the Information Actively</b>			35.866	0.001
Village	73	2.91		
Town	188	3.21		
Kerman City	89	3.54		
<b>Search, Find and Use the Information Inactively</b>			16.373	0.001
Village	73	2.84		
Town	188	3.09		
Kerman City	89	3.42		

more information in this area for patients and their families. Information literacy training programs offered by librarian might help to improve patients' health knowledge. Patients should be involved in teamwork in such a way that an oncologist, nutritionist, psychologist, therapist, information specialist or subject librarian work together to support the patient to enhance patients' knowledge in different cancer related fields. Since



chemotherapy may cause nutritional, psychological, and digestive disorders, it is recommended that an information-seeking committee be settled in oncology clinics in collaboration of different medical specialists to provide consultation on nutrition, psychology, sports, traditional medicine, so that all patients' information needs may be addressed during treatment and they may be prevented from applying self-medication and receiving inauthentic information such as information obtained from social networks and their relatives.

The results of this study showed that patients in the 30-41 age groups searched their needed information about their illness more frequently than patients over the age of 41 years. Female patients searched health information and found it through interpersonal interaction more than male patients. Higher educated patients with Masters and doctoral degrees were more actively seeking health information through the Internet, library, and medical journals. People in higher socio-economic groups, having higher education and being information literate, were familiar with relevant medical information databases and were seeking health information actively. Many older patients who were living in the countryside, were not aware of their disease diagnosis. There was a significant correlation between the place of residence and the health information-seeking behavior of patients with cancer. Patients who lived in urban areas were more inclined to use conventional sources of information than patients residing in the countryside in villages and towns. The findings showed that rural and elderly people obtained their health information from physicians and interpersonal interactions with other people whom they trust. As a result, the present study showed a correlation between demographics variables and information-seeking behavior of patients with cancer in Shahid Bahonar hospital and Javad Al-Aemeh clinic in Kerman during the academic year 2017-2018.

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#### CONFLICT OF INTEREST

The authors have no competing interests.

#### ETHICS APPROVAL

Not applicable to this paper. Because the human subjects who participated in our research are patients of DR. Moazed, the second author of this research.

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