



Determinants of Health Information Seeking Behavior among Persons with Cancer Aged 18 Years and Older in the United States

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Abstract

Background: Cancer is the second most common cause of death in the US. Seeking information about cancer has been positively linked to cancer-related health outcomes. The objective of this study is to assess the factors associated with health information seeking behavior (HISB) among adults aged ≥ 18 years with cancer in the United States.

Methods: Secondary data analysis was conducted using data from 538 adults with cancer who participated in the 2014 Health Information National Trends Survey (HINTS). Descriptive statistics were used to compute frequencies. Bivariate and multivariable logistic regression analyses were conducted to assess determinants of HISB among adults with cancer in the United States. Analyses were conducted using SAS version 9.4.

Results: After adjusting for socio-demographic factors, factors that decreased the likelihood of persons with cancer seeking health information included being Non-Hispanic Asian (OR: 0.06; 95% CI: 0.01-0.45); having less than a high school education (OR: 0.44; 95% CI: 0.20-0.98); having some college education (OR: 0.27; 95% CI: 0.09-0.77); and trusting cancer information from the Internet a little or not at all (OR: 0.43; 95% CI: 0.23-0.82).

Conclusion: Our results suggest that being Non-Hispanic Asian, having less than a college graduate education, and trusting cancer information on the Internet a little or not at all decreased the likelihood of individuals with cancer seeking health information. This highlights the need for development of effective cancer communication interventions for this population.

Keywords: Health information seeking behavior, Cancer, Health Information National Trends Survey (HINTS), Communication

1. INTRODUCTION

Cancer is the second most common cause of death in the United States (US), subsequent only to heart disease [1, 2]. Health information-seeking behavior (HISB) is the “intended behavior of an individual to satisfy perceived needs for health information” [3]. Different from information scanning, information seeking is intentionally, actively searching for health information on the internet, other forms of media or via conversation with a healthcare provider outside of the course of normal conversation. Information seeking has also been

defined as “a conscious effort to acquire information in response to a need or gap in knowledge” [4]. Conversely, information scanning is passively or inadvertently encountering health information via exposure to the media or some other means such as routine conversation with another individual [5].

According to the Pew Internet & American Life Project, 81% of adults in the US polled in 2012 reported using the Internet and 72% of those polled reported that they had searched for health information on the Internet [6]. Seeking information about cancer has been positively

linked to cancer-related health outcomes [7]. Among those who seek information about cancer, it has been found that awareness of cancer, knowledge and beliefs related to cancer, and preventive behaviors such as screening are more frequent [7].

Differences in HISB exist by race or ethnicity, gender, level of education, and attitude towards or trust in a source of health information. HISB is more common among non-Hispanic whites, women, younger individuals, those with higher levels of education, persons with higher socioeconomic status and people with a chronic disease or cancer [3]. Especially for older adults, the most trusted source is frequently a health care provider, followed by the Internet [8].

Understanding the HISB of individuals with cancer is important to determine how various methods of communication are used to obtain health information and to create more effective health communication strategies across this population [9]. Having access to more information about the disease process and treatment options allows for better informed decision-making among cancer patients, permitting them to take a more active role in their health care [10].

Increased HISB has mostly been associated with positive cognitive, behavioral, physical, and affective outcomes [11]. Some of these include but are not limited to increased knowledge of the disease process, improvement upon ability to make informed decisions, increased perception of control, and an improved ability to cope [11]. Other positive outcomes include discussion of health information with health care providers, improved ability to take care of oneself as well as to stick to the treatment plan, and modifications in health behaviors [11]. Individuals who seek health information more frequently experience an increased quality of life and decreases in fear, anxiety, and distress [11]. Positive outcomes of seeking information include an increase in hope and feelings of empowerment among patients [11]. The objective of this study is to assess determinants of HISB among adults in the US.

2. METHODS

2.1. Data Source

Data were analyzed from the 2014 Health Information National Trends Survey (HINTS), Cycle 4 to determine factors associated with HISB among persons with cancer aged 18 and

older in the US. HINTS is a biennial, cross-sectional survey of a nationally representative sample of non-institutionalized civilian American adults age 18 and older that is used to measure the influence of the health information environment. HINTS gauges how individuals in the US obtain and utilize health information, how information technology is used to manage health and health information, and to track this population's involvement in healthy behaviors. Additionally, several items specifically focus on cancer prevention and control. This study relied on secondary data from HINTS 2014, Cycle 4 which was the first iteration of HINTS to include questions regarding trust in sources of health information.

3. MEASURES

All measures in this study were based on self-reported data obtained from the 2014 HINTS, Cycle 4.

3.1. Dependent Variable

Self-reported HISB was determined if the participants answered “yes” to the question: “Have you ever looked for information about health or medical topics from any source?” Responses included “yes”, “no”, “unknown”, or “refused”. Records with “unknown” or “refused” responses or missing data were excluded from the analysis to minimize underestimation.

3.2. Covariates and Independent variables

Participants' gender, race/ethnicity, age, level of education, level of income, access to health insurance, and trust in sources of health information were assessed from the 2014 HINTS, Cycle 4.

3.3. Statistical Analyses

Descriptive statistics were used to compute frequencies. A bivariate analysis, using the chi-square test statistic (χ^2), was conducted to assess factors independently associated with self-reported HISB among persons with cancers aged ≥ 18 years in the US. A multivariable logistic regression analysis was used to estimate the adjusted odds ratios (AORs), the 95% confidence intervals (CIs) for odds ratios, and p values for each of the independent variables. Variables that were significant at the ≤ 0.05 level in the bivariate analyses were entered into the multivariable logistic regression model. All analyses were conducted using SAS version 9.4 [12]. A value of $p \leq 0.05$ was considered statistically significant.

4. RESULTS

The sociodemographic characteristics of the study population, all of whom responded to the HISB question, are summarized in Table 1. Of the 538 participants who answered “yes” to the question: “Have you ever looked for information about health or medical topics from any source?”, 453 (84.2%) reported seeking HISB, while 85 (15.8%) did not report seeking HISB. Of the 453 who reported seeking HISB,

the majority were female (60.1%), Non-Hispanic Whites (74.7%), aged ≥ 45 years (92.5%), had a high school education or less (43.7%), had an annual household income of less than \$50,000 (52.9%), and had health insurance (94.3%). Furthermore, the large proportion of the respondents who trusted cancer information from a doctor, internet, and family a lot or some of the time were 96.6%, 73.1%, and 52%, respectively (Table 1).

Table 1. Number* and percentage for self-reported health information seeking in persons with cancer by select characteristics (N=538): 2014 HINTS, United States

Select Characteristics	Have you ever looked for information about health or medical topics from any source?			p-value
	Total n (%)	No n (%)	Yes n (%)	
Overall	538 (100)	85 (15.8)	453 (84.2)	
Gender				0.35
Male	197 (40.8)	33 (45.8)	164 (39.9)	
Female	286 (59.2)	39 (54.2)	247 (60.1)	
Total	483 (100)	72 (100)	411 (100)	
Race/Ethnicity				0.001
Non-Hispanic White	334 (73.3)	42 (64.6)	292 (74.7)	
Non-Hispanic Black or African American	50 (11.0)	5 (7.7)	45 (11.5)	
Hispanic	50 (11.0)	14 (21.5)	36 (9.2)	
Non-Hispanic Asian	5 (1.0)	3 (4.6)	2 (0.5)	
Non-Hispanic Other	17 (3.7)	1 (1.6)	16 (4.1)	
Total	456 (100)	65 (100)	391 (100)	
Age Group				0.91
18-34	9 (1.8)	1 (1.3)	8 (1.9)	
35-39	9 (1.8)	1 (1.3)	8 (1.9)	
40-44	18 (3.5)	2 (2.5)	16 (3.7)	
45 and above	473 (92.9)	74 (94.9)	399 (92.5)	
Total	509 (100)	78 (100)	431 (100)	
Level of Education				<0.0001
Less than high school	206 (40.3)	17 (21.8)	189 (43.7)	
High school graduate	163 (31.9)	24 (30.8)	139 (32.1)	
Some college	94 (18.4)	22 (28.2)	72 (16.6)	
College graduate or more	48 (9.4)	15 (19.2)	33 (7.6)	
Total	511 (100)	78 (100)	433 (100)	
Level of Income				0.02
Less than \$50,000	262 (55.7)	50 (72.5)	212 (52.9)	
\$50,000 to \$74,999	72 (15.3)	8 (11.6)	64 (16.0)	
\$75,000 to \$99,999	56 (12.0)	6 (8.7)	50 (12.4)	
\$100,000 or more	80 (17.0)	5 (7.2)	75 (18.7)	
Total	470 (100)	69 (100)	401 (100)	
Health Insurance				0.17
Yes	492 (93.7)	75 (90.4)	417 (94.3)	
No	33 (6.3)	8 (9.6)	25 (5.7)	

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Total	525 (100)	83 (100)	442 (100)	
How much do you trust cancer information from a doctor?				0.001
A lot/Some	503 (95.3)	73 (88.0)	430 (96.6)	
A little/Not at all	25 (4.7)	10 (12.0)	15 (3.4)	
Total	528 (100)	83 (100)	445 (100)	
How much do you trust cancer information from the internet?				<0.0001
A lot/Some	334 (69.6)	33 (48.5)	301 (73.1)	
A little/Not at all	146 (30.4)	35 (51.5)	111 (26.9)	
Total	480 (100)	68 (100)	412 (100)	
How much do you trust cancer information from family?				0.52
A lot/Some	251 (51.4)	33 (47.8)	218 (52.0)	
A little/Not at all	237 (48.6)	36 (52.2)	201 (48.0)	
Total	488 (100)	69 (100)	419 (100)	

*Frequency may vary due to missing values

Table 2 shows the results of multivariable logistic regression adjusted for socio-demographic characteristics (gender, race or ethnicity, age, education, income), level of trust in cancer information from a doctor, internet, and family regressed on self-reported HISB among persons with cancer. Factors that decreased the likelihood of HISB included being Non-Hispanic Asian (AOR=0.06; 95% CI=0.01, 0.45); having less than a high school education (AOR=0.44; 95% CI=0.20, 0.98); having some college education (AOR=0.27; 95% CI=0.09, 0.77); and trusting cancer information from the Internet a little or not at all (AOR=0.43; 95% CI=0.23, 0.82). Individuals with some college education were 73% less likely to seek cancer information and trusting cancer from the Internet a little or not at all was associated with a 57% decreased likelihood of seeking cancer information from the Internet.

5. DISCUSSION

Seeking information about cancer has been positively linked to cancer-related health outcomes [7]. Individuals who seek information about cancer were more likely to have cancer-related awareness, knowledge, beliefs, preventive behaviors, and screening adherence [7]. In the present study, Non-Hispanic Asians were 94% less likely to seek cancer information. The same was reported previously [13]. Four possible explanations can be offered for a decreased likelihood of health information seeking among Non-Hispanic Asians. First, Non-Hispanic Asians tend towards having a

lower sense of self-risk for cancer when compared to Whites [13]. Second, Non-Hispanic Asians do prefer print materials as a primary source of health information [13]. Third, Non-Hispanic Asians could experience a language barrier especially among recent immigrants and first-generation immigrants. The final possible explanation could be the presumed propensity among Asians to favor Eastern medicine and philosophies in lieu of more westernized models.

Consistent with previous studies [3, 14], individuals with less than a high school education were 56% less likely to seek cancer information. One possible explanation could be due to decreased health literacy levels. A study which investigated differences in HISB between individuals with and without a high school diploma, found that individuals without a high school diploma reported lower usage of text-based sources such as the Internet or books but higher usage of oral sources of health information such as radio and television [15]. Almost equal rates of use of health care providers as a source of information existed between groups with and without a high school diploma [15]. However, the Internet proved to be a moderating factor showing that individuals without a high school diploma, who normally would have worse health status, could improve their health status with Internet use and improving their “health-related digital literacy skills” even beyond the health status of those with high school diplomas [15].

Table 2. Associations of persons with cancer who sought health related information by select characteristics, according to the multivariable logistic regression final model: 2014 HINTS, United States (N=453)

Select Characteristics	Adjusted OR(95% CI)for Persons with Cancer Who Sought Health Information	
	OR	95% CI
Race/Ethnicity		
Non-Hispanic White	Ref	
Non-Hispanic Black or African American	1.05	0.37-2.98
Hispanic	0.76	0.29-1.97
Non-Hispanic Asian	0.06	0.01-0.45
Non-Hispanic Other	2.04	0.25-16.69
Level of Education		
Less than high school	0.44	0.20-0.98
High school graduate	0.51	0.19-1.35
Some college	0.27	0.09-0.77
College graduate or more	Ref	
Income		
Less than \$50,000	0.57	0.19-1.75
\$50,000 to \$75,000	1.08	0.27-4.18
\$75,000 to \$99,999	0.56	0.15-2.10
\$100,000 or more	Ref	
How much do you trust cancer information from a doctor?		
A lot/Some	Ref	
A little/Not at all	0.37	0.09-1.54
How much do you trust cancer information from the internet?		
A lot/Some	Ref	
A little/Not at all	0.43	0.23-0.82

Consistent with the literature, trusting cancer information from the Internet a little or not at all was also associated with a decreased likelihood of an individual with cancer seeking health information. The sheer volume of information available on the Internet can be intimidating as well as unreliable, making it a less trustworthy source. Regardless of one’s experience using the Internet, consumer trust in online sources of health information is mediated by quality of message and the credibility of a website [16].

Interestingly, Miller and Bell (2012) posit that trust in sources of Internet health information becomes stronger across adulthood [17]. They also cite that there is a larger digital divide among older adopters and non adopters versus younger adopters and non adopters in that older adults tend to have a particularly pronounced distrust of Internet information in comparison to their younger counterparts, even when controlling for quality of healthcare, perceived general health, and age-related decline in Internet use for other common activities such as e-mail [17]. A possible reason for this phenomenon, as stated by Miller and Bell (2012), includes some individuals requiring

more time to get comfortable using the Internet. They also pointed to the fact that health care providers remain the most popular source of health information, particularly among older adults [17]. One way of mediating trust of the Internet is for health care providers to recommend trusted sites to patients. Another way is for providers to print additional information from the Internet during visits for patients to read later.

5.1. Study Strengths And Limitations

One strength of this study was that the data used were from a nationally representative sample, so it could possibly be generalized to the US population. Another strength is that this study relied on secondary data from HINTS 2014, Cycle 4 which was the first iteration of HINTS to include questions regarding trust in various sources of health information.

One limitation of this study includes the use of cross-sectional data in this analysis, indicating that no inference can be made regarding causality. Additionally, the data in this study were self-reported and can be subject to recall bias. Another limitation includes the fact that many questions were left unanswered, thus

limiting interpretation due to non response bias. An additional limitation is that HINTS, like many other surveys sent via mail, usually has a low response rate, thus decreasing its power of generalizability. HINTS 2014, Cycle 4 had a response rate of 34.44 percent, slightly lower than the previous three cycles, which ranged from 35.2 to forty percent [18].

6. CONCLUSION

Factors that decreased the likelihood of persons with cancer seeking health information included being Non-Hispanic Asian, having less than a high school education, having some college education, and trusting cancer information from the Internet a little or not at all. These findings underscore the need for focused efforts to increase HISB among persons with cancer and bolster communication with at-risk groups.

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ETHICAL APPROVAL

This study received exempt institutional review board (IRB) approval from the Morehouse School of Medicine IRB.

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