

The Role of Self-efficacy in Cancer Information Avoidance

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Abstract. Our study highlights the roles of health- and information-related self-efficacy in individuals' tendency to avoid cancer information. Drawing on a large ($n = 3,677$), nationally representative survey data, we explored differences between information avoiders vs. non-avoiders and identified the contributing factors to individuals' health and information efficacy. We then developed a path model of information avoidance to investigate two main issues. First, we ascertained that the relationship between people's health efficacy and their preference for information avoidance is mediated by their healthcare use and perceived quality of care. Second, we discovered that individual's trust toward health information sources is a key component in understanding their information efficacy and their preference for information avoidance. Trust is positively associated with information efficacy and mediates the relationship between information efficacy and information avoidance. Understanding who prefers to avoid health information and in which situations and why is critical to improving the state of health justice in this country.

Keywords: Information avoidance, Health information behavior, Self-efficacy, Trust.

1 Introduction

While many people seek information to cope with an illness [1,2,3,4,5], some prefer to avoid information on the topic [6,7]. Information avoidance can involve avoiding discussing a particular topic, avoiding situations where one may encounter unwanted information, and purposefully selecting which information to pay attention to and which to not [6]. In short, information avoidance includes the active or passive prevention of potentially unwanted information exposure, even when the information is readily available [8]. Information avoidance is not an uncommon phenomenon -- as Case et al. wrote, "It has long been noted that people may avoid information if paying attention to it will cause mental discomfort or dissonance... [Maslow] recognized that sometimes we would rather not know that we are at high risk for a disease or disaster" [7, p. 354]. Unfortunately, however, information avoidance has been linked with negative health outcomes, such as disease progression and disease spread [9]. It eventually leads to significant costs, including increased morbidity and mortality and increased healthcare expenditures [10]. These losses, however, are frequently not borne equally across various segments of society, as evidenced by the large disparities in life expectancy based on household income [11] and educational attainment and race [12]. Health justice, an ideal state in which everyone has equitable capabilities to

live a long and healthy life [13], remains unattainable for large swathes of the U.S. population.

Self-efficacy is defined as people's beliefs and perceptions of their capabilities to influence events that affect their lives [14]. People with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided [14,15]. While previous scholars have investigated the psychological predictors and socio-economic factors of information avoidance, there is less empirical work that examines the role of self-efficacy. One notable exception, however, is Wilson, whose 1996 Model of Information Behaviour invokes Folkman's stress and coping theory and Bandura's Social Learning Theory (particularly, the central concept of self-efficacy) to explain why people may not seek information despite having a need for it [16]. To better inform health and information professionals in creating future interventions, we seek to address this gap in understanding to what extent information avoidance is linked with health efficacy (one's degree of confidence in their ability to take care of their health) and information efficacy (one's degree of confidence that they can get advice or information about cancer if they need it). More specifically, we address the following research questions:

***RQ1:** What differences—if any—exist between individuals who would rather not know their chance of getting cancer (“information avoiders”) and those who would rather know (“non-avoiders”) this information?*

***RQ2:** To what extent are people's health and information efficacy levels related to their individual characteristics and their socioeconomic status?*

Finally, a major goal of this paper is to consider public health and educational initiatives focused on mitigating information avoidance behaviors regarding serious diseases such as cancer. We also seek to better equip people to make decisions about finding rather than avoiding health information. To do this, we must understand the interrelationships between the various factors that influence a person's preference for information avoidance, as well as their health and information efficacy. We used path analysis and mediation analysis to explore a third research question:

***RQ3:** How is information avoidance associated with health and information efficacy, as well as other individual characteristics?*

2 Related Work

Many studies [2,3,4,5,17] have found that among people with a life-threatening illness, there is a sizeable subpopulation that prefers to avoid information about their health condition. Prior research illustrates that social determinants can play a major role in information avoidance behaviors. Survey data from a major cancer hospital revealed that cancer survivors with lower incomes and greater debt were more likely to avoid information [18]. Relatedly, the same survey respondents in the lowest income bracket also reported lower levels of self-reported health [19]. Other studies have similarly found participants with lower educational levels to be more likely to avoid health information [20,21].

Another line of research examines the psychological predictors of information avoidance. Often, these individuals are motivated by a desire to control their anxiety [22] and/or to retain hope [6,23]. Information behavior theorists, including Wilson

[16] and Johnson, have recognized a link between lower levels of self-efficacy and information avoidance behaviors [7]. Relatedly, Miles et al. found that individuals with greater levels of cancer fear and cancer fatalism (believing that death is unavoidable after one has been diagnosed with cancer) are also more likely to avoid information, which can limit their exposure to critical cancer prevention and control information [24]. These findings are concerning when considered in parallel with recent data indicating that individuals from lower socioeconomic status groups are also more likely to report cancer fatalism. The same respondents were both less positive about early detection and more afraid to ask for help with a suspicious symptom [25]. McCutchan et al. also found that individuals from lower socioeconomic groups were more likely to have cancer fear and cancer fatalism beliefs, which were associated with their lower overall cancer symptom knowledge [26].

Counteracting the effect of demographic variables on patient's information-seeking behaviors can be a difficult prospect. However, some studies have shown the possibility of mediating the effects of these types of social determinants. Hovick et al. explained how social and cognitive factors, such as social participation and health literacy, among other factors, could potentially mediate the effect of socioeconomic status, race, and ethnicity on individuals' information seeking behaviors [27]. Reducing cancer fatalism among individuals from lower income groups may also be an effective strategy for preventing information avoidance. Miller (1995) found data that seems to indicate that lower levels of cancer fatalism can mediate the association between lower socioeconomic status and lower uptake of cancer screenings [28]. These findings emphasize the importance of improving health literacy and social support and reducing cancer fatalism through new interventions targeted specifically for individuals from disadvantaged backgrounds.

More recent studies have begun to explore the relationships between self-efficacy and information avoidance. St. Jean et al. found that lower self-efficacy among less well-educated individuals can pose a problem: Respondents with lower health- and information-related self-efficacy were more likely to avoid information [29]. This study extends prior work through a comprehensive examination of the roles of health and information efficacy in information avoidance.

3 Method

The National Cancer Institute conducts the Health Information National Trends Survey (HINTS) every few years to learn about U.S. adults' cancer-related perceptions and knowledge, their health behaviors, and their information access, needs, seeking, and use. This paper is based on the publicly available HINTS 4 Cycle 4 SPSS data set [30]. Data were collected from August through November 2014 via a paper questionnaire mailed to an equal-probability sample of U.S. households. A total of 3,677 questionnaires were returned, resulting in a 34.4% response rate. To analyze the data, we ran various descriptive and inferential statistical tests, including Chi-square tests and independent sample t-tests, regressions, and path analysis. We first explored characteristics that differed between information avoiders vs. non-avoiders (RQ1). We then used linear regression to assess predictors of health and information efficacy (RQ2). For RQ3, we employed path analysis, as simple multiple regression

could not have accounted for the interplay between demographic factors, disease-specific beliefs, and healthcare-specific and health information related variables. Below we introduce the variable used in our analyses.

3.1 Measurements

Information avoidance. Information avoidance was gauged using respondents' degree of agreement/disagreement with the statement, "I'd rather not know my chance of getting cancer." This was deemed to be a valid measure of the construct of information avoidance, as people's desire not to know that they are at high risk for a disease has been mentioned in the literature as a specific example of information avoidance [7]. We used this as dependent variable (DV) in our statistical analyses. In RQ1, we recoded this variable to binary by combining those who selected "Strongly agree" and "Somewhat agree" as information avoider ($N=1,109$; 31%), and the rest as non-avoiders ($N=2,432$; 69%). In RQ3 path analysis, we treated this variable as a Likert scale (1=strongly disagree; 4=strongly agree), with higher values indicating greater tendency to avoid information [$M(SD)=2.30(1.46)$].

Self-efficacy. In the context of cancer-related information avoidance, our study conceptualizes self-efficacy in two aspects: information-related self-efficacy and health-related self-efficacy.

- **Information efficacy.** Information efficacy was measured by respondents' indication of how confident they felt in their ability to get advice or information about cancer if they needed it (1=not confident at all; 5=completely confident). Higher values indicate greater information efficacy [$M(SD)=2.77(1.03)$].
- **Health efficacy.** Health efficacy was measured by respondents' assessment of their confidence in their ability to take good care of their health (1=not confident at all; 5=completely confident). Higher scores indicate that participants have greater health efficacy [$M(SD)=2.79(.86)$].

Perceived quality of healthcare. Perceived quality of healthcare was measured by 7-item questions (Cronbach's alpha = .94) that assess the respondents' satisfaction with their healthcare over the past year. These questions ask how often (1=Never; 4=Always) their healthcare providers gave them a chance to ask all of their questions, gave sufficient attention to their feelings, involved them in decisions related to their health care, etc. Scores were added to form one scale, with a higher score indicating greater satisfaction with healthcare providers [$M(SD)=16.54(4.79)$, Range:7-28].

Trust toward health information sources. Trust toward health information sources was measured by 9-item questions (Cronbach's alpha = .82) that assess to what extent (1=Not at all; 2=A little; 3=Some; 4=A lot) respondents trust information about cancer from various sources, including doctors, family or friends, newspapers, etc. Scores were added to form one scale, with a higher score indicating greater trust in these sources [$M(SD)=14.34(4.66)$; Range:0-27].

Perceived control of health. Perceived control of one's health was measured by 5-item questions (Cronbach's alpha = .90) that assess to what extent (1=Not at all; 2=A little; 3=Some; 4=A lot) respondents believe that health behaviors determine whether or not a person will develop major diseases. Scores were added to form one scale, with a higher score indicating greater perceived control over whether or not they will develop the health condition [$M(SD)=12.63(3.16)$; Range:0-15].

Perceived barriers to health information seeking. Among the 1,612 (54%) respondents who have sought cancer-related information, perceived barriers to health information seeking was measured by 4-item questions (Cronbach's alpha = .85). These questions focused on cancer-related information seeking and sense-making, asking respondents to what extent they concur (1=strongly disagree; 4=strongly agree) with the statements such as "It took a lot of effort to get the information you needed". Scores were added to form one scale, with a higher score indicating that participants encounter more barriers when they search for and try to make sense of health information [$M(SD)=4.53(3.17)$; Range:0-12].

3.2 Control Variables

Demographic, cancer history and health insurance: Demographic variables include gender (60% F; 40% M), age [$M(SD)=51.9(21.17)$], education (1=less than 8 years; 4=vocational or technical training; 7=Postgraduate) [$M(SD)=4.83(1.64)$], household income (1=less than \$20,000;3=\$35,000 to < \$50,000; 5=more than \$75,000) [$M(SD)=3.14(1.56)$]. Additionally, cancer history and health insurance were treated as binary variables.

Social support. Social support [$M(SD)=1.76(0.57)$] was measured (Cronbach's alpha = .75) by adding two binary variables from the following survey questions: (1) "Is there anyone you can count on to provide you with emotional support when you need it?" and (2) "Do you have friends or family members that you talk to about your health?" Most respondents indicated that they do have social support (78%).

Disease anxiety: Respondents were asked how worried they are about getting cancer (1=not at all worried; 5=extremely worried). Higher scores indicate greater disease anxiety [$M(SD)=2.58(1.22)$].

Pessimistic mentality: Pessimistic mentality is measured by 4-item questions (Cronbach's alpha = .89). Respondents were asked to indicate over the past 2 weeks, how often they have been bothered by negative emotions, feeling down, depressed or hopeless (1=not at all; 2=Several days;3=more than half the days; 4=nearly daily). Higher scores indicate a higher level of pessimistic mentality [$M(SD)=2.00(2.89)$].

Fatalism: Fatalism is measured by a participant's agreement with the statements, "There's not much you can do to lower your chances of getting cancer" , "It seems like everything causes cancer" and "In adults, cancer is more common than heart disease". Higher scores indicate a higher degree of fatalism [$M(SD)=8.06(1.05)$; Range:3-12].

4 Findings

4.1 RQ1: Characteristics of Information Avoiders vs. Non-Avoiders

Patterns between these two groups based on their preferences regarding information avoidance and their demographic, psychological, and disease-related characteristics are examined below. To extend previous work [24], healthcare and health information specific factors were also included in our analysis.

Socio-economic and psychological characteristics. Information avoiders tend to be older [$M(SD)=55.82(16.16)$] than non-avoiders [$M(SD)=54.58(16.49)$] ($t(2056)=2.05, p<.05$). They also tend to have less education [$M(SD)=4.53(1.71)$] than non-avoiders [$M(SD)=4.98(1.6)$] ($t(1957)=-7.40, p<.001$), and lower household incomes [$M(SD)=4.81(1.55)$] than non-avoiders [$M(SD)=5.3(2.26)$] ($t(1890)=-5.20, p<.001$). Information avoiders tend to live in less urban places ($t(1983)=-2.61, p<.01$). Disabled respondents are significantly more likely to be information avoiders ($X^2(1)=12.96, p<.01, \Phi=.11$). In terms of psychological differences, information avoiders scored higher on pessimistic mentality ($t(1851)=2.35, p<.05$).

Health efficacy, perceived control, and fatalism beliefs. Information avoiders have a significantly lower level of health efficacy ($t(1,952) = -1.81, p<.5$) and lower perceived control regarding their health ($t(1693) = -6.58, p<.001$). They also tend to feel more fatalistic regarding their health ($t(1889) = 11.74, p<.001$), as they were more likely to agree with views such as “Everything causes cancer” and “There’s not much you can do to lower your chances of getting cancer”.

Healthcare access, utilization and quality. Information avoiders are less likely to have health insurance ($X^2(1)=9.90, p<.01, \Phi=.05$). They also have a statistically significant lower frequency of doctor visits ($t(2067) = -3.65, p<.002$), are less likely to have a regular doctor ($X^2(1)=18.46, p<.01, \Phi=.07$), and tend to have a lower perceived quality of health care ($t(1502)=-1.7, p<.05$).

Health information access, trust, and information efficacy. Overall, information avoiders have a lower level of information efficacy ($t(1952) = -1.81, p<.05$), and are less likely to use the Internet ($X^2(1)=33.46, p<.001, \Phi = .09$) and to seek health information ($X^2(1)=38.96, p<.001, \Phi = .15$). Even when they do engage in health information seeking, they perceive significantly greater barriers in finding and making sense of the information ($t(633)=1.9, p<.05$).

4.2 RQ2: How are people’s health and information efficacy related to their individual characteristics?

Various factors (see Table 1) emerged as significant predictors of respondents’ health and information efficacy. Although health efficacy is largely affected by an individual’s self-rated general health ($\beta=.52, p<.001$), perceived healthcare quality is also positively associated with health efficacy ($\beta=.12, p<.001$). So among people with poor health, those who have better perceived healthcare quality tend to have greater health efficacy, as they are more confident in their ability to take good care of their health. Also, annual household income positively correlated with health efficacy ($\beta=.09, p<.01$), while age was negatively associated ($\beta= -.12, p<.001$). Health efficacy was negatively associated with a pessimistic mentality ($\beta= -.18, p<.001$) and fatalism ($\beta=-.10, p<.001$). So respondents who are more pessimistic (i.e., agree that “There’s not much you can do to lower your chances of getting cancer”) have lower health efficacy than those who are more optimistic.

With regard to information efficacy, perceived barriers to health information seeking play a major role ($\beta=.42, p<.001$); however, an individual’s degree of trust toward sources of cancer information is also a significant contributing factor ($\beta=.16, p<.001$); that is, people with greater trust in sources of cancer information tend to have greater information efficacy. Respondents’ perceived health status ($\beta=.07,$

$p < .01$) is also positively associated with their information efficacy -- people who perceive their health to be poor are more likely to have lower information efficacy, indicating they find it harder to get advice or information about cancer. Additionally, age ($\beta = -.07, p < .01$) is negatively associated with information efficacy, while urbanization ($\beta = .06, p < .01$) of one's residence is positively correlated. Thus, older people and residents in more rural areas tend to have lower information efficacy.

Table 1. Summary of Regression Analysis for Predicting Information Avoidance

Variable	Health Efficacy			Information Efficacy		
	B	SE B	β	B	SE B	β
Age	-0.01	0.00	-0.09***	0.00	0.00	-0.08*
Education	0.01	0.02	0.03	0.02	0.02	0.04
Household Income	0.03	0.01	0.09**	0.00	0.01	-0.01
Urbanization	0.01	0.01	0.02	-0.04	0.01	0.06*
Pessimistic mentality	-0.05	0.01	-0.08**	-0.01	0.01	-0.02
Social support	0.05	0.05	0.03	-0.06	0.05	-0.03
General health	0.45	0.02	0.52***	-0.01	0.03	-0.01
Cancer history (Yes)	0.00	0.06	0.00	0.16	0.06	0.07*
Cancer anxiety	-0.06	0.02	-0.09*	-0.01	0.02	-0.02
Perceived control	0.02	0.01	0.06	0.01	0.01	0.02
Fatalism	-0.06	0.02	-0.06**	-0.02	0.02	-0.04
Health insurance (Yes)	-0.11	0.09	-0.03	0.02	0.10	0.00
Healthcare utilization	-0.02	0.01	-0.04	0.01	0.01	0.02
Healthcare quality	0.03	0.01	0.12***	0.01	0.01	0.07**
Perceived barriers	0.01	0.01	0.02	-0.12	0.01	0.42***
Trust toward sources	0.00	0.01	0.00	0.04	0.01	0.16***
Information efficacy	0.13	0.03	0.11***	-	-	-
Health efficacy	-	-	-	0.14	0.03	0.12***
	R ²	0.40		0.33		
	F (18,1070)=	39.48***		28.65***		

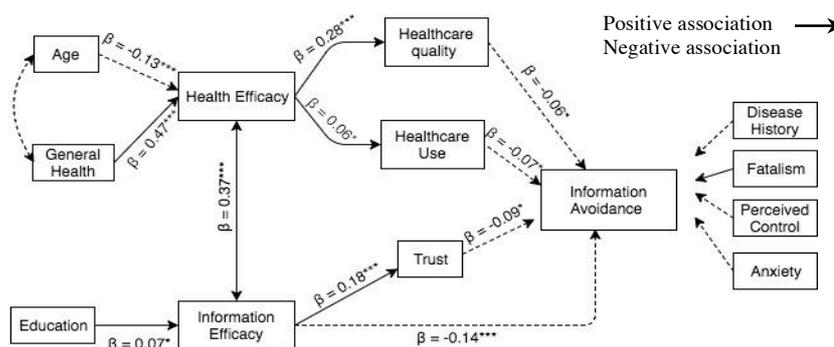
* $p < .05$. ** $p < .01$. *** $p < .001$

To summarize our analysis related to RQ2, we found different factors that contribute to differences in individuals' health and information efficacy. The variation across these two dependent variables motivated our decision to build a multi-factor model in evaluating the phenomenon of information avoidance, which we present below.

4.3 RQ3: How is information avoidance associated with health- and information-related efficacy and other individual characteristics?

Our final RQ builds on prior analyses to consider the interrelationships between health and information efficacy, demographic factors, psychological predictors, and disease factors in explaining information avoidance. We used the preference to avoid information as the primary dependent variable to build the path model (Figure 1).

Figure 1. Path model with β weights and direct and indirect pathways



The final model provided a strong fit to the data, ($X^2(25,1,957)=31.281, p=.275$; CFI=.92, RMSEA=.04). All paths shown were significant. We found negative correlations between information avoidance and several other variables, including information efficacy ($\beta=-.14, p<.001$), perceived healthcare quality ($\beta=-.06, p<.05$), healthcare use ($\beta=-.07, p<.05$), and trust in cancer information sources ($\beta=-.09, p<.05$). In line with prior research looking at the effect of disease-related beliefs on information avoidance, we found that perceived control over one's health ($\beta=-.10, p<.01$) and disease anxiety ($\beta=-.17, p<.05$) were negatively correlated with information avoidance, and fatalism was positively correlated ($\beta=.09, p<.05$) with information avoidance.

Further, we examined the mediation pathways between health and information efficacy and information avoidance. We found that some of the associations between health efficacy and information avoidance were via perceived healthcare quality and healthcare utilization. Also, the relationship between information avoidance and information efficacy is mediated through people's trust in cancer information sources.

Health efficacy is negatively associated with information avoidance. This relationship remained after controlling for demographic variables and respondents' personal cancer history ($\beta=-.05; P<.001$). The two mediators considered were perceived healthcare quality and healthcare utilization. Based on Sobel test, both variables resulted in a significant reduction in the association between health efficacy and information avoidance (perceived healthcare quality: $z(2946)=-2.9, p=.003$; healthcare utilization: $z=2.49; p=.013$) when entered individually. The significant relationship between health efficacy and information avoidance disappeared when either was included in the regression model. Therefore, both of these variables are mediators of the relationship between health efficacy and information avoidance.

Overall, information efficacy, perceived healthcare quality, healthcare use, and disease-related beliefs explain 13% of the variance in a person's information avoidance preferences.

5 Discussion

Our findings suggest that information avoidance is intricately linked with many of the factors that contribute to the lack of health justice in the U.S., including income disparities and the concomitant differential levels of access to education; health insurance; regular, high-quality healthcare; and comprehensible health information. In addition, information avoidance is linked to affective factors, such as pessimism and

fatalistic beliefs regarding one's health, lower perceived control over one's health, and lower health and information efficacy. These results seem to echo the findings from other information behavior theorists on the connections between information avoidance and self-efficacy [7,16]. Information avoiders in this study were less likely to use the Internet and to seek out health information. When they did try to find cancer information, they were much more likely to encounter barriers in finding and understanding information. Information avoidance was predicted by lower information efficacy, lower perceived healthcare quality, less healthcare use, and pessimistic and fatalistic beliefs regarding one's health. Further, we establish that the strong relationship between information avoidance and health efficacy is explained by healthcare use and perceived healthcare quality. Similarly, the strong relationship between information avoidance and information efficacy is explained by respondent trust in cancer information sources. Taken together, these findings underscore the fundamental contribution of health literacy to the lack of health justice in this country. Understanding the many factors that are linked with information avoidance can inform interventions aiming to help people prevent the potential negative consequences of information avoidance. Although some related factors, such as household income, are difficult to alter, others are potentially malleable. For example, health and information professionals can work with people to improve their health literacy and their health information seeking skills, and relatedly, their health and information efficacy. Increased health and information efficacy, in turn, can help people to feel less pessimistic and fatalistic and more in control of their health. Such interventions can ultimately help to decrease information avoidance and motivate and enable people to achieve more optimal health outcomes.

Our study aims to understand who avoids health information under what circumstances and why. The major limitation of this study is its reliance on self-reported, cross-sectional data, meaning our analyses can only identify correlations between variables and not causation. That said, our study serves as a foundation for future work in prediction modeling, such as machine-learning initiatives that aim for early detection of individuals' preference for information avoidance.

6 Conclusion

In this study, we moved beyond the socio-economic and psychological factors, and instead focus on the roles of both health and information efficacy in explaining why people may avoid health information. We also identified several mediators, including trust toward information sources, healthcare use, and healthcare quality. We recommend that information and healthcare professionals should improve people's health and information efficacy and help them to find and understand trustworthy health information. Health policymakers can also help to intervene in the progression from low health and information efficacy to information avoidance to negative health outcomes by ensuring that everyone has access to affordable, high quality healthcare. Through such interventions aimed to benefit everyone, including particularly those who are socioeconomically disadvantaged, we can help to ensure that every individual has equitable opportunities to live a long and healthy life.

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