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Factors Influencing Internet Health Information Seeking In India: An Application of the Comprehensive Model of Information Seeking

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With a basis of the comprehensive model of information seeking, a survey study was conducted in India that investigated the relationships among three categories of factors (demographics, health belief, and technology enabler) and three types of Internet health information seeking (IHIS) behaviors (preference for IHIS, diversity of IHIS, and discussing Internet health information with doctors). The results showed that being female was positively associated with preference for IHIS, and being young was associated with greater diversity of IHIS. In addition, three health belief factors (perceived susceptibility, perceived severity, and self-efficacy) had positive and significant relationships with diversity of IHIS. Finally, two technology enabler factors (skill in IHIS and Internet access) were positively associated with three information behaviors. However, the other technology enabler, trust in online health information, was positively related to preference for IHIS, but negatively associated with diversity of IHIS and discussing Internet health information with doctors.

Keywords: Internet health information seeking, health belief, demographics, technology enabler, India, eHealth

The Internet has been increasingly considered an important source for health information seeking. The Internet affords users privacy, convenience, anonymity, and immediacy of information searching (Cotten & Gupta, 2004). A wealth of health information available online helps people understand health problems, diagnoses, and treatments (Agree, King, Castro, Wiley, & Borzekowski, 2015). As a result, health information seeking through the Internet has been found to enhance medical knowledge, empower patient participation in decision-making, and improve health outcomes (Khoo, Bolt,

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Babl, Jury, & Goldman, 2008). Despite the benefits of online health information, the usage of Internet health information seeking (IHIS) remains low in developing countries. Compared with developed countries, such as the United States, where the adoption rate of IHIS has been more than 75% (National Cancer Institute, 2018), in India, the context of the current study, among Internet users, only 32% have sought health information online (Lee & Lin, 2016). In India, Internet penetration has been escalating, with an estimated 540 million people being active Internet users. This is largely due to increased availability of bandwidth, inexpensive data plans, and various government initiatives under the Digital India campaign (see, for instance, statista.com). Despite the increasing Internet penetration rate, the proportion of people who use the Internet to look for health information is still low, incongruent with the increasing number of Internet users in India (Holden, 2011).

In the current literature on IHIS, there is a lack of research on different categories of contributing factors to IHIS. Some past studies have only focused on individual demographic differences rather than on theoretical reasons why such demographic factors have an effect on IHIS (Renahy, Parizot, & Chauvin, 2008). It is important to understand why some demographic variables make a difference. For example, to explain why females have more health information seeking, scholars noted that females were more health conscious than males (Ahadzadeh, Sharif, & Ong, 2018). Therefore, a couple of studies (see, for instance, Ahadzadeh, Sharif, Ong, & Khong, 2015) aimed to investigate the role of individual health characteristics and beliefs to fill the gap in explaining the effect of demographics on IHIS. This line of research draws constructs primarily from health behavior change models, but has ignored or downplayed the role of communication and media. On the other hand, prior research that is based on models of media usage for IHIS often has neglected the power of health-related motivations (Xiao, Sharman, Rao, & Upadhyaya, 2014). Online health information seeking differs from searches in other information channels (e.g., Internet vs. other traditional media), and information content (e.g., health vs. nonhealth). Thus, in addition to the demographic factors, an examination of IHIS should incorporate both technology and health factors. Another notable limitation to the body of work on IHIS is that researchers treat IHIS as unidimensional. Past research has mainly examined whether or not people had IHIS behaviors, or the frequency of IHIS, and they often represent IHIS as one composite score (Basnyat, Nekmat, Jiang, & Lin, 2018). The present study extends the current IHIS literature by focusing on three different perspectives, namely, preference for IHIS, diversity of IHIS, and discussing online health information with doctors. In light of this, the purpose of this study is to examine the relationships among three categories of factors (demographics, health belief, and technology enabler) and three dimensions of IHIS (preference for IHIS, diversity of IHIS, and discussing Internet health information with doctors) in India.

Internet Health Information Seeking (IHIS)

Different from passive information exposure, in which people encounter health information within their daily routine life, IHIS is goal oriented; that is, people have some informational goal in mind, and they locate their desired information on their own initiative (Niederdeppe et al., 2007). Thus, people turn to the Internet and engage in IHIS to look for health information to reduce uncertainties about certain conditions. The next section discusses three dimensions of IHIS, namely, preference for IHIS, diversity of IHIS, and discussing Internet health information with doctors.

Preference for IHIS

People can search for health information from interpersonal sources, such as doctors, family and friends, and media channels, such as the Internet, books, newspapers, and television (Basnyat et al., 2018). They can also obtain health information from organizations, such as governments, churches, and charitable organizations (Hesse et al., 2005). Faced with a variety of sources, people might have preferred sources to seek health information. People's preferred health information source varied across countries. For example, in the United States, about 70% of American adults looked for health information from the Internet first, followed by doctors (13.6%; Somera, Lee, Badowski, & Cassel, 2016). However, a study conducted in Saudi Arabia showed that doctors were the first choice for information, with pharmacists and the Internet ranked second and third (Alduraywish et al., 2020). In the context of India, Lin and Dutta (2017) found that the use of the Internet for health information seeking was correlated with the use of other channels, such as family, friends, doctors, and newspapers. Although we know that multiple information sources are used together in India for health information, we focus on whether the Internet is the first health information source choice when people encounter a health issue. It is important to understand people's first-choice source of health information because an initial information search can provide them with necessary knowledge for subsequent searches. It also plays a key role in influencing people's beliefs about the health problem and the decision-making about healthcare that follows (Xiao et al., 2014).

Diversity of IHIS

With the rapid development of ICTs, the Internet offers ample ways to obtain health information. For example, search engines can generate rich health information (Spink et al., 2004), and health websites introduce scientific findings (Rains & Karmikel, 2009). In addition, people with a specific illness can make use of online support groups that create networks with peers who have similar health conditions, allowing users to share common experiences and provide effective coping strategies (Coulson, 2005). Further, emerging online medical consultations even allow patients to receive diagnosis and treatment information from doctors entirely via the Internet (Jiang & Street, 2017). In this article, we focus on the diversity of IHIS, which is defined as the variety of health-related online activities people use during the process of information seeking (Xiao et al., 2014). A diverse use of the Internet for health information demonstrates the active engagement in information search and a broader range of topics being sought, which can ensure that one's informational needs are appropriately satisfied (Rutten, Squiers, & Hesse, 2006). Diversity of IHIS is also supported by the channel complementarity theory, which suggests that different types of information-searching behaviors do not replace each other. Instead, they exist concurrently to augment users' information base (Dutta-Bergman, 2004).

Discussing Internet Health Information With Doctors

There has been a shift in the role of patients, from being passive recipients to active consumers of health information. More and more patients turn to the Internet to acquire knowledge on their health conditions and to bring the online health information to medical encounters to discuss with doctors. According to the Harris Poll, among adults who access the Internet for health information, more than half (57%) often discuss with their doctors what they have found on the Internet (Glick, 2013). When patients

share health information they found on the Internet with doctors, they can also obtain useful information from doctors during such communication. For example, doctors help patients to evaluate the quality of online health information and determine which specific information is suitable for their individual unique condition (Kim & Kim, 2009). In addition, doctors often assist patients in navigating the healthcare and information environment, guiding them to reliable health information sources (McMullan, 2006). Epstein and Street (2007) highlighted that patients' discussion about Internet health information is a two-way information exchange process that focuses on the reciprocal efforts of both doctors and patients to manage information and achieve a shared understanding of the medical issues.

Factors Influencing Internet Health Information Seeking

We proposed our conceptual framework with a basis of the comprehensive model of information seeking (CMIS; Johnson & Meischke, 1993). This model has been widely used to explain why and how individuals seek health information. The CMIS identifies antecedent factors (e.g., demographics, salience, and beliefs) and information carrier factors (e.g., utility of channels) that can influence information-seeking behaviors. Borrowing from the CMIS, this study considers three categories of potential antecedents of Internet health information seeking: demographic factors, health belief factors, and technology enabler factors.

Demographic Factors

Demographic factors are included in the CMIS as background antecedents. Although past research has suggested that demographics could explain only a small proportion of variances in information seeking (Johnson & Meischke, 1993), more recent studies have demonstrated that people's use of various sources for health information seeking varied by age, gender, education and income. For example, a national survey in France showed that people who are female, who are younger, and who have higher income and education are more likely to use the Internet for health information (Renahy et al., 2008). Similar results were also found in the context of the United States. Y. A. Hong and Cho (2016) demonstrated that age, education, income, and racial/ethnic group remained persistent predictors of Internet use for health activities from 2003 to 2011. Thus, we propose the following hypothesis:

H1: Being female, being younger, having higher education and higher income, and being in a higher caste group are positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Health Belief Factors

According to the CMIS, belief is a personal relevance factor that can motivate information seeking (Johnson & Meischke, 1993). In the health context, three health beliefs are important to note, namely, perceived susceptibility, perceived severity, and self-efficacy.

Perceived susceptibility is one's perception about the chance of experiencing some risk or getting a disease (Glanz, Rimer, & Viswanath, 2008). Individuals would have a subjective assessment of their health condition and the perceived risk. If they believe there is a high possibility of developing a health issue, it is

more likely that they will adopt a health-related behavior to get rid of the risk. On the other hand, a perceived low susceptibility could deter them from acting on their health because of the low relevance to them (Carpenter, 2010). For example, Ahadzadeh and colleagues (2015) did a cross-sectional survey study and found that perceived susceptibility was positively associated with health-related Internet use. Another experiment research study reported a causal relationship between perceived susceptibility and acceptance of online health information services (Mou, Shin, & Cohen, 2016). In line with prior research, we put forth the following hypothesis:

H2: Perceived susceptibility is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Perceived severity is defined as the belief about how serious a condition and its consequence are (Glanz et al., 2008). Perceived severity relates to one's evaluation of negative health outcomes. When people consider the seriousness of their condition to be severe, they are more likely to adopt a healthful behavior to prevent the negative consequences; therefore, they have more active health information seeking to cope with the health challenge. Baker, Wagner, Singer, and Bundorf (2003) noted that patients who considered themselves to have a more serious health condition were more likely to seek clinical services through online means as compared with those experiencing minor ailments. Based on previous studies, we propose the following hypothesis:

H3: Perceived severity is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Self-efficacy refers to one's confidence in performing certain behavior to achieve a desired goal (Glanz et al., 2008). High self-efficacy is often associated with setting higher goals and having stronger motivation to attain the goals; with lower self-efficacy, however, one will perceive more difficulties with, and greater barriers to, behavior change. In the health context, self-efficacy in health management can lead to increased efforts to follow healthy lifestyles, including searching for health information. For instance, Jiang and Street (2017) stated that patients who had greater confidence in effectively managing their health reported higher usage of Internet-based communication with doctors. In an experiment study, T. Hong (2006) found that individuals with higher self-efficacy spent more time searching for health information. Therefore, echoing the existing literature, we hypothesize that:

H4: Self-efficacy is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Technology Enabler Factors

Technologies can facilitate people's Internet use for health information if they hold a positive attitude toward online health information, have the necessary skills to effectively search for online health information, and are provided with access to the Internet (Griffin, Dunwoody, & Neuwirth, 1999). In the CMIS, information carrier characteristics are expected to positively relate to information-seeking actions. A key information carrier characteristic is the credibility of the medium. Thus, one technology enabler factor selected in the current study

is trust in online health information. The second technology enabler factor is skill in IHIS. The CMIS underscores the utility of channels, which examines how effectively users can find their needed information provided by the medium. Searching for health information on the Internet sometimes takes individuals into highly technical prose filled with medical jargon and a plethora of online information. Therefore, one's skill, or ability to effectively use the Internet for information, matters. Finally, we consider ease of Internet access as another technology enabler factor. IHIS is impacted by infrastructure and access to the Internet.

Trust in online health information is defined as one's belief that the Internet fulfills its task of providing health information in reliable and integral ways (Ha & Jung Lee, 2011). The greater trust people have toward online health information, the more useful they perceive the information to be, and thus, they might put in extra effort and time to search for health information (Xiao et al., 2014). In addition, trust in an information source increases users' engagement in information-based elaboration. For instance, high trust in health information will likely lead consumers to feel that they are well-informed, and therefore, they will proactively process the information found, increasing their perceived control and reducing uncertainty (Ha & Jung Lee, 2011). Similarly, Ruppel (2016) found that trust in a particular source could act as a heuristic cue that guides attention; thereby, trust in a health information source could increase health information seeking. Hence, based on the preceding discussion, we hypothesize that:

H5: Trust in online health information is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Skills to search, select, process, and understand information play a key role in promoting eHealth adoption. Revere and colleagues (2007) indicated that the Internet led to a growing amount of information and data, increasing the complexity of IHIS. Further, online health information is often of poor quality, and the medical information written in complex or technical language becomes another barrier (Cline & Haynes, 2001). Prior research has showed that people with better skill sets to handle health information overload had higher levels of autonomy and empowerment to search for health information from the Internet (Crook, Stephens, Pastorek, Mackert, & Donovan, 2016). Miller and Bell (2012) compared those who adopted the Internet for health searches with nonadopters and showed that adopters reported less perceived health information search challenges. Thus, the current study accords with past research and advances the hypothesis:

H6: Skill in IHIS is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Internet access provides benefits (e.g., social support), whereas not having frequent access to the Internet has negative consequences (e.g., social exclusion; Hargittai & Hinnant, 2008). In India, on the one hand, Internet penetration has been significantly increasing during the past decades. On the other hand, despite the provision of Internet access, the number of people who actually use the Internet for health purposes still remains low (Lin & Dutta, 2017). Considering the inconsistency in the degree to which people are willing to and able to make use of Internet access to improve health and well-being, it is important to examine whether the easy and frequent Internet access can be translated into its use for health-related activities. In the health communication literature, access to information technologies can influence the use of online services to obtain health resources. For instance, Rains (2008) found that those with a high-speed

Internet connection (e.g., broadband) are more likely to use the Internet for health information seeking than those with a dial-up connection. Jiang and Street (2017) also indicated that more diversified access to the Internet is associated with the higher possibility of exchanging health information with doctors online. Hale (2013) examined Internet access by considering the number of places where people use the Internet and showed that the diversity of Internet access was positively related to online health information seeking. Thus, consistent with the important role of Internet access, we propose the following hypothesis:

H7: Having frequent Internet access is positively associated with (a) preference for IHIS, (b) diversity of IHIS, and (c) discussing Internet health information with doctors.

Method

Sampling

The sample was recruited in India by a commercial marketing research company through an online survey. The company filtered Internet protocol addresses to ensure that only Internet users residing in India could participate. There were four inclusion criteria: Participants should (1) be Internet users, (2) understand English, (3) reside in India, and (4) be 18 years old or older. The sample size was 990. The study protocol was approved by the institutional review boards at the authors' institutions. Respondents' informed consent was also obtained.

Measurement

Preference for IHIS was measured by one item similar to previous studies assessing this variable (Basnyat et al., 2018). Respondents were asked to report the most recent time they looked for health information and where they went first. For responses, 14 communication channels (e.g., book, family, friend, doctor, Internet) were listed. If respondents chose the Internet as the first means to seek health information, it was coded as 1 (and 0 otherwise). Fifty-eight percent of respondents selected the Internet as the first source of health information.

Diversity of IHIS was measured by asking respondents how frequently they engaged in the following five activities on the Internet: (1) buying medicine or vitamins; (2) participating in an online support group; (3) using email to communicate with doctors; (4) using a website to help with diet, weight, or physical activity; and (5) looking for a healthcare provider (Xiao et al., 2014). Responses were on a 7-point Likert scale ranging from 1 (*never*) to 7 (*very frequently*) and averaged to represent the diversity of IHIS. The higher score demonstrates greater diversity of IHIS (M = 4.02; SD = 1.49; Cronbach's alpha = .79).

Discussing Internet health information with doctors was measured by one item. Respondents were asked to indicate whether, in the past 12 months, they talked to a doctor about any kind of health information they obtained from the Internet (yes = 1, no = 0). This item was derived from Rice (2006), who also used one item to measure patients' discussion of online health information with providers. About 80% of respondents selected "yes," showing that the majority of Internet users in India have brought online health information to medical encounters to discuss with doctors.

Perceived susceptibility was measured by four items drawn from previous studies (Hartoonian, Ormseth, Hanson, Bantum, & Owen, 2014). Respondents indicated their agreement with items, such as "My chances of getting illness in the future are high," and "My physical health could increase my chance of getting illness." A 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) was used. The responses were averaged, and the higher value represents greater perceived susceptibility (M = 4.27; SD = 1.54; Cronbach's alpha = .87).

Perceived severity was assessed with three items based on prior research (Hartoonian et al., 2014). Respondents reported the extent to which they agreed that if they had developed some form of illnesses, (1) their whole life would change; (2) they would not be able to handle the daily routine changes in their life; and (3) the illness would be a hopeless disease to manage their life around. The responses were on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) and averaged; the higher the score, the higher the seriousness perceived (M = 4.14; SD = 1.57; Cronbach's alpha = .85).

Self-efficacy was measured by eight items, adapted from past research on illness management (Wallston, Rothman, & Cherrington, 2007). Respondents were asked to identify their agreement with statements that they could, for example, "manage their health well," "accomplish health-related goals set," and "handle daily routine well with respect to health." Responses were scored on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). All responses were averaged. Higher scores demonstrated better self-efficacy in health management (M = 4.98; SD = 1.03; Cronbach's alpha = .90).

Trust in online health information was measured by a single item drawn from prior research (Hou & Shim, 2010). Respondents were asked to answer the question, "To what extent do you think the Internet is trustworthy about providing health information?" on a 7-point scale, ranging from 1 (*very little*) to 7 (very much) (M = 2.49; SD = 1.38).

Skill in IHIS was measured by three items similar to other research assessing online health information-seeking skills (Jiang & Liu, 2020). Respondents were asked, "In general, how easy or hard is it for you to use the Internet to find health information?" To answer this question, respondents indicated their agreement with three statements: (1) "It took a lot of effort to get the health information you needed from the Internet," (2) "You felt frustrated during your search for health information from the Internet," and (3) "The health information you received from the Internet was hard to understand." A 7-point Likert scale ranging from 1 (*strongly agree*) to 7 (*strongly disagree*) was adopted. The responses were averaged to create one scale for data analysis (M = 3.84; SD = 1.72; Cronbach's alpha = 0.76). The higher score reflected better skills in seeking health information from the Internet.

Internet access was operationally defined as the frequency of accessing the Internet from different locations. It was measured by seven items adapted from Hale (2013) that examined Internet access from seven places. Respondents were asked to report the frequency of accessing the Internet from (1) home, (2) school, (3) work, (4) friends, (5) family, (6) neighbor, and (7) Internet café. Responses were on a 7-point Likert scale ranging from 1 (*never*) to 7 (*very frequently*) and averaged (M = 3.93; SD = 1.18; Cronbach's alpha = .76). The higher value indicated more frequent Internet access.

Demographic variables included age, gender (1 = male, 0 = female), education (from 1 = *high school or below* to 4 = *postgraduate),* personal monthly income in Indian rupees (from 1 = *10,000 and below* to 11 = *more than 1 lakh*), and caste status (1 = Dalit, 2 = Shudras, 3 = Vaishyas, 4 = Kshatriyas, 5 = Brahmins). Individuals reported as Brahmins were in the highest social status, and Dalit was the lowest social status.

Statistical Analysis

One dependent variable, diversity of IHIS, was a continuous variable. Thus, we performed multivariate linear regression, reporting a standardized coefficient, Beta. The other two dependent variables, preference for IHIS and discussing Internet health information, are dichotomous variables. Thus, we conducted logistic regression, reporting odds ratio (OR). Independent variables were demographic factors, health belief factors, and technology enabler factors.

Results

Descriptive statistics are provided in Table 1. The average age was 29.2 years (ranging from 18 to 65), which is generally in line with the population median age of 26.8 in India (Shivakumar, 2013). Sixty-nine percent of respondents were male, fitting with the general population in India, which has significantly more male Internet users (i.e., 71% male and 29% female; Statista, 2019). The average education was 3.1, which was at the college level. The mean score of income was 3.07, which was above 30,000 rupees. As reported in India's *Business Today* ("India's Per-Capita Income," 2020), the per capita income in 2020 was 11,254 rupees monthly. Regarding the caste status, 30.7% of participants were Brahmins, and 11.8% were Dalit.

Table 1. Descriptive Statistics.

Variables	*M*	*SD*
Age	29.21	8.21
Gender (being male)	69%	-
Income	3.07	2.54
Education	3.10	0.86
Caste	3.55	1.32
Perceived susceptibility	4.27	1.54
Perceived severity	4.14	1.57
Self-efficacy	4.98	1.03
Trust in online health information	2.49	1.38
Skill in IHIS	3.84	1.72
Internet access	3.93	1.18
Preference for IHIS	58%	-
Diversity of IHIS	4.02	1.49
Discussing Internet health information with doctors	80%	-

Note. N = 990. IHIS = Internet health information seeking.

H1 posited that demographic factors would be predictors of IHIS. As indicated in Tables 2–4, being female was positively associated with preference for IHIS (OR = .65, $p < .01$). In addition, being young was associated with greater diversity of IHIS (β = −.05, $p < .05$).

Table 2. Regression Models Predicting Preference for IHIS.

	Preference for IHIS		
	OR	Lower 95% CI	Higher 95% CI
Age	1.00	0.99	1.03
Gender (being male)	0.65**	0.48	0.89
Income	0.95	0.90	1.01
Education	0.87	0.74	1.03
Caste	0.93	0.84	1.03
Perceived susceptibility	1.09	0.97	1.22
Perceived severity	0.99	0.89	1.11
Self-efficacy	0.89	0.77	1.03
Trust in online health information	1.64***	1.44	1.85
Skill in IHIS	1.29***	1.10	1.31
Internet access	1.26***	1.11	1.44

Note. $N = 990$. IHIS = Internet health information seeking.
* $p < .05$. ** $p < .01$. *** $p < .001$.

H2, H3, and H4 predicted, respectively, that the three health belief factors would be positively related to IHIS. As displayed in Tables 2–4, perceived susceptibility (β = .11, $p < .01$), perceived severity (β = .13, $p < .001$), and self-efficacy (β = .07, $p < .05$) had a positive and significant relationship with diversity of IHIS, whereas they failed to significantly affect preference for IHIS and discussing Internet health information with doctors.

H5 hypothesized that trust in online health information is positively associated with IHIS. As demonstrated in Tables 2–4, trust in online health information was positively related to preference for IHIS (OR = 1.63, $p < .001$), but negatively associated with diversity of IHIS (β = −.09, $p < .01$) and discussing Internet health information with doctors (OR = .83, $p < .01$).

Table 3. Regression Models Predicting Diversity of IHIS.

	Diversity of IHIS	
	Beta	*t*
Age	−0.06*	−2.17
Gender (being male)	0.02	0.89
Income	0.02	0.75
Education	0.02	0.85
Caste	0.02	0.61
Perceived susceptibility	0.11**	3.33
Perceived severity	0.13***	3.94
Self-efficacy	0.07*	2.46
Trust in online health information	−0.09***	−3.36
Skill in IHIS	0.26***	8.96
Internet access	0.30***	10.58

Note. N = 990. IHIS = Internet health information seeking.
* $p < .05$. ** $p < .01$. *** $p < 0.001$.

H6 hypothesized that skill in IHIS is positively related to IHIS. As illustrated in Tables 2–4, skill in IHIS had positive relationships with preference for IHIS (OR = 1.20, $p < .001$), diversity of IHIS (β = .26, $p < .001$), and discussing Internet health information with doctors (OR = 1.13, $p < .05$).

H7 predicted that Internet access would be positively associated with IHIS. As shown in Tables 2–4, the frequency of Internet access was positively related to preference for IHIS (OR = 1.26, $p < .001$), diversity of IHIS (β = .30, $p < .001$), and discussing Internet health information with doctors (OR = 1.20, $p < .05$).

Table 4. Regression Models Predicting Discussing Internet Health Information With Doctors.

	Discussing Internet Health Information With Doctors		
	OR	Lower 95% CI	Higher 95% CI
Age	0.99	0.97	1.01
Gender (being male)	0.84	0.58	1.20
Income	1.04	0.97	1.11
Education	1.08	0.89	1.30
Caste	1.07	0.95	1.20
Perceived susceptibility	1.09	0.96	1.23
Perceived severity	0.97	0.86	1.11
Self-efficacy	1.12	0.95	1.33
Trust in online health information	0.83**	0.73	0.93
Skill in IHIS	1.13*	1.02	1.26
Internet access	1.20*	1.03	1.40

Note. N = 990. IHIS = Internet health information seeking.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

In the context of India, the present study examined users' three dimensions of Internet health information behaviors—preference for IHIS, diversity of IHIS, and discussing online health information with doctors. We also studied the effects of demographic factors, health belief factors (e.g., perceived susceptibility, perceived severity, and self-efficacy), and information technology–related factors—including trust in online health information, skill in IHIS, and Internet access—on users' Internet health information behaviors.

Among demographic factors, only age and gender had significant effects. Younger respondents used the Internet for a greater variety of health-related activities. This result is in line with our expectation and with past studies. Compared with young people, seniors are often unfamiliar with new media technologies. Friemel (2016) found that Internet use was strongly skewed in older adults, leading to a partial exclusion of old seniors in Internet adoption. Rains (2008) also indicated that those who were younger were more likely to use the Internet for health-related information seeking and communication. In addition, we found that females were more likely to select the Internet as their first-choice channel for health information. This resonates with existing studies showing that women are more engaged in searching for health information in general, and from the Internet specifically (Baumann, Czerwinski, & Reifegerste, 2017). Also, compared with men, women had greater interest in health information, showed more active search activities, and used more types of sources to seek health information (Ek, 2015).

As expected, Internet access is a significant predictor of online information seeking. Balarajan, Selvaraj, and Subramanian's (2011) study noted that individuals with the greatest need for health care in India have the greatest difficulty accessing physical health services and thus may need to depend on the Internet for health information support. The more frequently people can access the Internet, the more likely it is that they will use it for information searching. This finding is consistent with prior research on the impact of Internet access on health information seeking, even for low-income populations (Zach, Dalrymple, Rogers, & Williver-Farr, 2012).

Similar to Internet access, skill in IHIS is also positively associated with all three Internet health information behaviors. This finding is not surprising, and it echoes previous studies on the critical role of health literacy (Quinn, Bond, & Nugent, 2017). Health literacy is defined as one's ability to obtain, process, and comprehend health information and access health-related services (Haun, Luther, Dodd, & Donaldson, 2012). Low health literacy restricts people's ability to effectively use online health resources and hinders their capacity to be an active participant in health management (Quinn et al., 2017). Mackert, Mabry-Flynn, Champlin, Donovan, and Pounders (2016) found that people with lower health literacy were less likely to use health information technologies and considered online health information as less useful. The current online information environment is complicated and dynamic. Therefore, people might find health information functionally inaccessible because of navigating difficulties, such as information overload, disorganization, and overly technical language (Cline & Haynes, 2001). To use the Internet to satisfy health information needs, health literacy and skills in IHIS matter.

Trust in online health information had different relationships with the three Internet health information behaviors. First, higher trust was associated with more preference for IHIS. This positive relationship is

consistent with previous studies (Hou & Shim, 2010; Xiao et al., 2014), supporting the idea that trust could serve as an important cognitive process that drives subsequent information seeking. Metzger and Flanagin (2013) noted that Internet users employ various types of cognitive heuristic to process information to determine what information to trust online. The more trust people have in the online health information, the more useful they perceive the information to be; therefore, they place greater value on the information (Dutta-Bergman, 2003).

Second, trust in online health information was negatively associated with diversity of IHIS, which diverges from our hypothesis. One plausible explanation for this negative relationship might be that trust should not be considered as a monolithic entity. Internet health-related activities could generate health information with different levels of trustworthiness. For example, using search engines for information searches, people often obtain information about unverified treatment or medication recommendations (low trustworthiness), whereas communicating directly with doctors online (high trustworthiness) can reduce the risk of receiving misleading information from nonprofessionals or even marketing efforts (Smailhodzic, Hooijsma, Boonstra, & Langley, 2016). Thus, a general statement that trust in online health information would increase the diversity of online health activities is uninformative. We need to examine trust toward specific information or activities on the Internet. This explanation is supported by Lee and colleagues (2018), who stated that health information seekers are trapped within specific trust ecologies that prevent them from navigating a broader range of communication channels for health information.

Third, different from our hypothesis, trust in online health information was found to negatively relate to discussing online health information with doctors. This result is inconsistent with previous studies. For example, Chung (2013) found that people who had a great deal of trust in online health information asked about it during their visits to doctors. A similar finding was reported in Imes, Bylund, Sabee, Routsong, and Sandford (2008), which showed that those who had lower levels of trust in online information did not share it with providers, and they remained silent about their Internet searches. It is important to note that such a positive relationship was documented in developed countries, such as the United States. In developing countries, such as India, people's overall media literacy and health literacy are lower (D'Cruz & Aradhya, 2013). Therefore, they often have limited capability to judge the trustworthiness of online information. When they encounter inaccurate information, many are unable to locate reliable information for better self-management. Under such circumstances, people in India need to bring the searched-for information to their healthcare providers for verification and guidance.

Different from technology enabler factors, which all had significant relationships with three types of Internet health information behaviors, in this study, health belief factors only influenced diversity of IHIS. The low explanatory power of health factors might suggest that technology-related factors are more important than health-related factors in promoting Internet health information seeking, which focuses on both the information channels that people use (Internet) and the information content that people search for (health). Several theories can support this argument. For example, the risk information seeking and processing model states that individuals' perceived hazard characteristics in most situations influence information seeking and processing indirectly, mediated by informational subjective norm and information insufficiency, whereas relevant information channel beliefs and information-gathering capacity can have a more direct effect (Griffin et al., 1999). The information foraging theory also highlights the role of attitude toward the information channel

and the ability to use information technologies, given the plethora of irrelevant information in the current information environment, particularly the Internet. Humans need to use strategies to efficiently find desired information, minimizing the mental cost to achieving their goals (Pirolli, 2007).

Limitations and Directions for Future Research

The present study has several limitations. First, we collected data using an online survey. Thus, the results may not be generalized to the whole population in India. Prior research has shown that respondents in online surveys tend to be younger and more educated (Evans & Mathur, 2005). This issue is reflected in our study. Compared with general populations in India, participants in our sample have higher levels of education and income, which could lead to some biased conclusions. For instance, the insignificant effects of these two demographic factors found in this study may be explained by the lack of variations in these two variables. Future research should ideally recruit participants with different socioeconomic backgrounds using probability samples. Second, there are several issues in the measurement. For example, single-item measurement was used to assess variables, such as preference for IHIS, and trust. Future research should use multiple-item measurements to enhance the reliability and validity. In addition, potential self-report bias might exist in the survey. For example, skill in IHIS was measured by asking respondents to identify their perceived skills in looking for health information from the Internet. They could easily overestimate or underestimate their ability. Future research should use more objective measures, such as requiring participants to complete certain information-seeking tasks. Third, the cross-sectional survey design makes it impossible to test causal effect on IHIS. Future research should use longitudinal surveys or experimental methods. Fourth, this survey was conducted among the general population rather than patient samples. People with different health conditions might have different needs, and thus, how factors influence IHIS may also vary. Future research can examine the research topic among patients with a specific illness. Finally, this study did not explore whether accessing information on a mobile device would have any effect on online health information seeking. Given that the majority of the population in India relies on mobile phones for the Internet, future studies should explore how and whether this mobile mode has an impact on health information seeking.

Theoretical and Practical Implications

This study makes significant theoretical contributions. First, we proposed a conceptual framework that includes different categories of factors influencing IHIS. In contrast to many previous studies that mainly examine one aspect of contributing factors, our analysis of demographic, health, and technology factors offers a more comprehensive understanding of what could promote Internet use for seeking health information. Second, our research investigated three types of Internet health information behaviors, namely, preference for IHIS, diversity of IHIS, and discussing Internet health information with doctors. Previous studies mostly focused on one search behavior. Treating information seeking as multidimensional is crucial because the manner in which a particular factor might or might not lead to information seeking remains untested. The present study extends the literature by identifying which type of contributing factor can be associated with what specific information-seeking behavior. Third, we enrich the literature by conducting this study in the context of India, a developing country in South Asia. Given the large inequality

worldwide in terms of the distribution of information technology, information literacy, and healthcare resources, more studies of technology and health are needed in lower resourced health systems.

In addition to theoretical contributions, this study has also offered important practical implications. First, our result showed that technology-related factors had stronger explanatory power than demographic and health factors in influencing IHIS. Therefore, future campaigns and interventions to promote eHealth practices can make greater efforts to address participants' concerns about eHealth technologies. Second, among the technology enabler factors, the significant effects of trust in online health information and skill in IHIS highlight the need to improve people's ability to use the Internet for health information and facilitate more positive beliefs about health-related Internet use. Health education professionals can conduct trainings in the community to teach people how to effectively use the Internet to locate, interpret and use health information. In addition, health communicators should disseminate more reliable health content on the Internet, and health websites can offer certain mechanisms that encourage users' active communication and interaction to correct misinformation in a timely manner. Third, Internet access is still a strong predictor of ICTs adoption. Thus, continuous efforts are needed to provide Internet access to a larger population, particularly in developing countries. For example, as the mobile phone adoption rate increases rapidly in India, it is important to offer affordable and good-quality Internet access through cellular networks. It is also important to note that in a society with increasing Internet penetration, some groups in the population, reaped fewer benefits from health-related Internet use. Therefore, special attention should be paid to those people to help them maximize the health benefits of eHealth practices.

Conclusion

The eHealth movement is under way within healthcare systems in developing countries. However, the adoption of eHealth resources remains low. We conducted a survey study in India and offered support for the significant influences of three categories of factors (demographics, health belief, and technology enabler) on three Internet health information behaviors (preference for IHIS, diversity of IHIS, and discussing Internet health information with doctors). In sum, understanding what factors matter in the health digitalization process can help better promote eHealth adoption in developing countries and ultimately enhance people's health and well-being.

References

Agree, E. M., King, A. C., Castro, C. M., Wiley, A., & Borzekowski, D. L. (2015). "It's got to be on this page": Age and cognitive style in a study of online health information seeking. *Journal of Medical Internet Research, 17*(3), e79. doi:10.2196/jmir.3352

Ahadzadeh, A. S., Sharif, S. P., & Ong, F. S. (2018). Online health information seeking among women: The moderating role of health consciousness. *Online Information Review, 42*(1), 58–72. doi:10.1108/oir-02-2016-0066

Ahadzadeh, A. S., Sharif, S. P., Ong, F. S., & Khong, K. W. (2015). Integrating health belief model and technology acceptance model: An investigation of health-related Internet use. *Journal of Medical Internet Research, 17*(2), e45. doi:10.2196/jmir.3564

Alduraywish, S. A., Altamimi, L. A., Aldhuwayhi, R. A., AlZamil, L. R., Alzeghayer, L. Y., Alsaleh, F. S., . . . & Tharkar, S. (2020). Sources of health information and their impacts on medical knowledge perception among the Saudi Arabian population: Cross-sectional study. *Journal of Medical Internet Research, 22*(3), e14414. doi:10.2196/14414

Baker, L., Wagner, T. H., Singer, S., & Bundorf, M. K. (2003). Use of the Internet and e-mail for health care information: Results from a national survey. *JAMA: The Journal of the American Medical Association, 289*(18), 2400–2406. doi:10.1001/jama.289.18.2400

Balarajan, Y., Selvaraj, S., & Subramanian, S. V. (2011). Health care and equity in India. *The Lancet, 377*(9764), 505–515. doi:10.1016/S0140-6736(10)61894-6

Basnyat, I., Nekmat, E., Jiang, S., & Lin, J. (2018). Applying the modified comprehensive model of information seeking to online health information seeking in the context of India. *Journal of Health Communication, 23*(6), 563–572. doi:10.1080/10810730.2018.1493058

Baumann, E., Czerwinski, F., & Reifegerste, D. (2017). Gender-specific determinants and patterns of online health information seeking: Results from a representative German health survey. *Journal of Medical Internet Research, 19*(4), e92. doi:10.2196/jmir.6668

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication, 25*(8), 661–669. doi:10.1080/10410236.2010.521906

Chung, J. E. (2013). Patient–provider discussion of online health information: Results from the 2007 Health Information National Trends Survey (HINTS). *Journal of Health Communication, 18*(6), 627–648. doi:10.1080/10810730.2012.743628

Cline, R. J. W., & Haynes, K. M. (2001). Consumer health information seeking on the Internet: The state of the art. *Health Education Research, 16*(6), 671–692. doi:10.1093/her/16.6.671

Cotten, S. R., & Gupta, S. S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine, 59*(9), 1795–1806. doi:10.1016/j.socscimed.2004.02.020

Coulson, N. S. (2005). Receiving social support online: An analysis of a computer-mediated support group for individuals living with irritable bowel syndrome. *Cyberpsychology & Behavior, 8*(6), 580–584. doi:10.1089/cpb.2005.8.580

Crook, B., Stephens, K. K., Pastorek, A. E., Mackert, M., & Donovan, E. E. (2016). Sharing health information and influencing behavioral intentions: The role of health literacy, information overload, and the Internet in the diffusion of healthy heart information. *Health Communication, 31*(1), 60–71. doi:10.1080/10410236.2014.936336

D'Cruz, A. M., & Aradhya, M. S. (2013). Health literacy among Indian adults seeking dental care. *Dental Research Journal, 10*(1), 20–24. doi:10.4103/1735-3327.111760

Dutta-Bergman, M. (2003). Trusted online sources of health information: Differences in demographics, health beliefs, and health-information orientation. *Journal of Medical Internet Research, 5*(3), e21. doi:10.2196/jmir.5.3.e21

Dutta-Bergman, M. J. (2004). Complementarity in consumption of news types across traditional and new media. *Journal of Broadcasting & Electronic Media, 48*(1), 41–60. doi:10.1207/s15506878jobem4801_3

Ek, S. (2015). Gender differences in health information behaviour: A Finnish population-based survey. *Health Promotion International, 30*(3), 736–745. doi:10.1093/heapro/dat063

Epstein, R. M., & Street R. L. (2007). *PCC in cancer care: Promoting healing and reducing suffering*. Bethesda, MD: National Cancer Institute.

Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research, 15*(2), 195–219. doi:10.1108/10662240510590360

Friemel, T. N. (2016). The digital divide has grown old: Determinants of a digital divide among seniors. *New Media & Society, 18*(2), 313–331. doi:10.1177/1461444814538648

Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice*. San Francisco, CA: Jossey-Bass.

Glick, M. (2013). The Internet-informed patient: Opportunities for patient-centered care. *Journal of the American Dental Association, 144*(3), 239–240. doi:10.14219/jada.archive.2013.0104

Griffin, R. J., Dunwoody, S., & Neuwirth, K. (1999). Proposed model of the relationship of risk information seeking and processing to the development of preventive behaviors. *Environmental Research, 80*(2), S230–S245. doi:10.1006/enrs.1998.3940

Ha, S., & Jung Lee, Y. (2011). Determinants of consumer-driven healthcare: Self-confidence in information search, health literacy, and trust in information sources. *International Journal of Pharmaceutical and Healthcare Marketing, 5*(1), 8–24. doi:10.1108/17506121111121550

Hale, T. M. (2013). Is there such a thing as an online health lifestyle? Examining the relationship between social status, Internet access, and health behaviors. *Information, Communication & Society, 16*(4), 501–518. doi:10.1080/1369118X.2013.777759

Hargittai, E., & Hinnant, A. (2008). Digital inequality: Differences in young adults' use of the Internet. *Communication Research, 35*(5), 602–621. doi:10.1177/0093650208321782

Hartoonian, N., Ormseth, S. R., Hanson, E. R., Bantum, E. O., & Owen, J. E. (2014). Information-seeking in cancer survivors: Application of the comprehensive model of information seeking to HINTS 2007 data. *Journal of Health Communication, 19*(11), 1308–1325. doi:10.1080/10810730.2013.872730

Haun, J., Luther, S., Dodd, V., & Donaldson, P. (2012). Measurement variation across health literacy assessments: Implications for assessment selection in research and practice. *Journal of Health Communication, 17*(Suppl. 3), 141–159. doi:10.1080/10810730.2012.712615

Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. K., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information: The impact of the Internet and its implications for health care providers: Findings from the first Health Information National Trends Survey. *Archives of Internal Medicine, 165*(22), 2618–2624. doi:10.1001/archinte.165.22.2618

Holden, D. (2011). Current trends in the use of the Internet for health information. In D. McDaid & A. L. Park (Eds.), *Bupa Health Pulse 2010: Online health: Untangling the Web* (pp. 14–17). London, UK: British United Provident Association.

Hong, T. (2006). The Internet and tobacco cessation: The roles of Internet self-efficacy and search task on the information-seeking process. *Journal of Computer-Mediated Communication, 11*(2), 536–556. doi:10.1111/j.1083-6101.2006.00026.x

Hong, Y. A., & Cho, J. (2016). Has the digital health divide widened? Trends of health-related Internet use among older adults from 2003 to 2011. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 72*(5), 856–863. doi:10.1093/geronb/gbw100

Hou, J., & Shim, M. (2010). The role of provider–patient communication and trust in online sources in Internet use for health-related activities. *Journal of Health Communication, 15*(Suppl. 3), 186–199. doi:10.1080/10810730.2010.522691

Imes, R. S., Bylund, C. L., Sabee, C. M., Routsong, T. R., & Sanford, A. A. (2008). Patients' reasons for refraining from discussing Internet health information with their healthcare providers. *Health Communication, 23*(6), 538–547. doi:10.1080/10410230802460580

India's per-capita income rises 6.8% to Rs 11,254 a month in FY20. (2020). *Business Today*. Retrieved from https://www.businesstoday.in/current/economy-politics/india-per-capita-income-rises-68-to-rs-11254-a-month-in-fy20/story/393333.html

Jiang, S., & Liu, P. L. (2020). Digital divide and Internet health information seeking among cancer survivors: A trend analysis from 2011 to 2017. *Psycho-oncology, 29*(1), 61–67. doi:10.1002/pon.5247

Jiang, S., & Street, R. L. (2017). Factors influencing communication with doctors via the Internet: A cross-sectional analysis of 2014 HINTS survey. *Health Communication, 32*(2), 180–188. doi:10.1080/10410236.2015.1110867

Johnson, J. D., & Meischke, H. (1993). A comprehensive model of cancer-related information seeking applied to magazines. *Human Communication Research, 19*(3), 343–367. doi:10.1111/j.1468-2958.1993.tb00305.x

Khoo, K., Bolt, P., Babl, F. E., Jury, S., & Goldman, R. D. (2008). Health information seeking by parents in the Internet age. *Journal of Paediatrics and Child Health, 44*(7–8), 419–423. doi:10.1111/j.1440-1754.2008.01322.x

Kim, J., & Kim, S. (2009). Physicians' perception of the effects of Internet health information on the doctor–patient relationship. *Informatics for Health and Social Care, 34*(3), 136–148. doi:10.1080/17538150903102422

Lee, S. T., Dutta, M. J., Lin, J., Luk, P., & Kaur-Gill, S. (2018). Trust ecologies and channel complementarity for information seeking in cancer prevention. *Journal of Health Communication, 23*(3), 254–263. doi:10.1080/10810730.2018.1433253

Lee, S. T., & Lin, J. (2016). A self-determination perspective on online health information seeking: The Internet vs. face-to-face office visits with physicians. *Journal of Health Communication, 21*(6), 714–722. doi:10.1080/10810730.2016.1157651

Lin, J., & Dutta, M. (2017). A replication of channel complementarity theory among Internet users in India. *Health Communication, 32*(4), 483–492. doi:10.1080/10410236.2016.1140268

Mackert, M., Mabry-Flynn, A., Champlin, S., Donovan, E. E., & Pounders, K. (2016). Health literacy and health information technology adoption: The potential for a new digital divide. *Journal of Medical Internet Research, 18*(10), e264. doi:10.2196/jmir.6349

McMullan, M. (2006). Patients using the Internet to obtain health information: How this affects the patient–health professional relationship. *Patient Education and Counseling, 63*(1–2), 24–28. doi:10.1016/j.pec.2005.10.006

Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics, 59*, 210–220. doi:10.1016/j.pragma.2013.07.012

Miller, L. M. S., & Bell, R. A. (2012). Online health information seeking: The influence of age, information trustworthiness, and search challenges. *Journal of Aging and Health, 24*(3), 525–541. doi:10.1177/0898264311428167

Mou, J., Shin, D. H., & Cohen, J. (2016). Health beliefs and the valence framework in health information seeking behaviors. *Information Technology & People, 29*(4), 876–900. doi:10.1108/itp-06-2015-0140

National Cancer Institute. (2018). *Health information national trends survey* (HINTS). Retrieved from https://hints.cancer.gov/

Niederdeppe, J., Hornik, R. C., Kelly, B. J., Frosch, D. L., Romantan, A., Stevens, R. S., . . . & Schwartz, J. S. (2007). Examining the dimensions of cancer-related information seeking and scanning behavior. *Health Communication, 22*(2), 153–167. doi:10.1080/10410230701454189

Pirolli, P. (2007). *Information foraging theory: Adaptive interaction with information*. New York, NY: Oxford University Press.

Quinn, S., Bond, R., & Nugent, C. (2017). Quantifying health literacy and eHealth literacy using existing instruments and browser-based software for tracking online health information seeking behavior. *Computers in Human Behavior, 69*, 256–267. doi:10.1016/j.chb.2016.12.032

Rains, S. A. (2008). Health at high speed: Broadband Internet access, health communication, and the digital divide. *Communication Research, 35*(3), 283–297. doi:10.1177/0093650208315958

Rains, S. A., & Karmikel, C. D. (2009). Health information-seeking and perceptions of website credibility: Examining Web-use orientation, message characteristics, and structural features of websites. *Computers in Human Behavior, 25*(2), 544–553. doi:10.1016/j.chb.2008.11.005

Renahy, E., Parizot, I., & Chauvin, P. (2008). Health information seeking on the Internet: A double divide? Results from a representative survey in the Paris metropolitan area, France, 2005–2006. *BMC Public Health, 8*(1), 69. doi:10.1186/1471-2458-8-69

Revere, D., Turner, A. M., Madhavan, A., Rambo, N., Bugni, P. F., Kimball, A., & Fuller, S. S. (2007). Understanding the information needs of public health practitioners: A literature review to inform design of an interactive digital knowledge management system. *Journal of Biomedical Informatics, 40*(4), 410–421. doi:10.1016/j.jbi.2006.12.008

Rice, R. E. (2006). Influences, usage, and outcomes of Internet health information searching: Multivariate results from the Pew surveys. *International Journal of Medical Informatics, 75*(1), 8–28. doi:10.1016/j.ijmedinf.2005.07.032

Ruppel, E. K. (2016). Scanning health information sources: Applying and extending the comprehensive model of information seeking. *Journal of Health Communication, 21*(2), 208–216. doi:10.1080/10810730.2015.1058438

Rutten, L. J. F., Squiers, L., & Hesse, B. (2006). Cancer-related information seeking: Hints from the 2003 Health Information National Trends Survey (HINTS). *Journal of Health Communication, 11*(Suppl. 1), 147–156. doi:10.1080/10810730600637574

Shivakumar, G. (2013). India is set to become the youngest country by 2020. *The Hindu*. Retrieved from https://www.thehindu.com/news/national/india-is-set-to-become-the-youngest-country-by-2020/article4624347.ece

Smailhodzic, E., Hooijsma, W., Boonstra, A., & Langley, D. J. (2016). Social media use in healthcare: A systematic review of effects on patients and on their relationship with healthcare professionals. *BMC Health Services Research, 16*(1), 442. doi:10.1186/s12913-016-1691-0

Somera, L. P., Lee, H. R., Badowski, G., & Cassel, K. (2016). Health information seeking, source trust, and culture: A comparative analysis of health information trends and needs between Guam and the United States. *Journal of Health Communication, 21*(4), 469–478. doi:10.1080/10810730.2015.1095822

Spink, A., Yang, Y., Jansen, J., Nykanen, P., Lorence, D. P., Ozmutlu, S., & Ozmutlu, H. C. (2004). A study of medical and health queries to Web search engines. *Health Information & Libraries Journal, 21*(1), 44–51. doi:10.1111/j.1471-1842.2004.00481.x

Statista. (2019). *India: Average age of the population from 1950 to 2050 (median age in years)*. Retrieved from https://www.statista.com/statistics/254469/median-age-of-the-population-in-india/

Wallston, K. A., Rothman, R. L., & Cherrington, A. (2007). Psychometric properties of the perceived diabetes self-management scale (PDSMS). *Journal of Behavioral Medicine, 30*(5), 395–401. doi:10.1007/s10865-007-9110-y

Xiao, N., Sharman, R., Rao, H. R., & Upadhyaya, S. (2014). Factors influencing online health information search: An empirical analysis of a national cancer-related survey. *Decision Support Systems, 57*, 417–427. doi:10.1016/j.dss.2012.10.047

Zach, L., Dalrymple, P. W., Rogers, M. L., & Williver-Farr, H. (2012). Assessing Internet access and use in a medically underserved population: Implications for providing enhanced health information services. *Health Information & Libraries Journal, 29*(1), 61–71. doi:10.1111/j.1471-1842.2011.00971.x