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Caregivers of children feel confident about using the Internet for health information

Emma Delemere M.sc | Rebecca Maguire PhD CPsychol

Department of Psychology, Maynooth University, Maynooth, Ireland

Correspondence

Emma Delemere, Department of Psychology, Maynooth University, Co. Kildare, Maynooth W23 F2H6, Ireland.

Email: emma.delemere.2020@mumail.ie

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Abstract

Background: Caregivers of children may rely on internet sources, health care providers, peers or family for health information.

Objective: To examine the impact of sociodemographic factors on the use of the internet for health information by caregivers of children, and the impact on self-efficacy, effort and frustration.

Methods: Using data from the 2019 Health Information National Trends Survey, the effects of information source on self-efficacy, effort and frustration was examined using the complex samples module of SPSS.

Results: The internet was the most common source of health information for caregivers of children ($n = 247$), with high confidence, low frustration and effort reported. Younger, higher educated and higher income caregivers were significantly more likely to use the internet for health information. Information from Health Care Providers (HCPs) was associated with greater confidence, and information from peers associated with lesser effort and frustration. No significant effects on self-efficacy, effort or frustration for online health information was noted compared to other sources.

Conclusions: Efforts to reduce barriers to online health information may be required for some groups of caregivers, and health care providers may have a role to play in this.

KEYWORDS

children, consumer health information, digital information resources, eHealth, health information needs, internet, parents, patient information

BACKGROUND

The internet is the most common source of health information, allowing for widespread sharing of information (Bujnowska-Fedak et al., 2019; Finney Rutten et al., 2019). Information sought online often supplements that obtained from health care providers (HCPs) on medical conditions, treatments or prescriptions, or may be used to

inform health and lifestyle changes (Beckjord et al., 2007). Use of the internet to support health goals is facilitated by its ubiquitous, low-cost and interactive nature (Camden & Silva, 2021; Powell et al., 2008; Ziebland & Wyke, 2012). In more recent times, the impact of Severe Acute Respiratory Syndrome Coronavirus two (SARS-CoV-2), or COVID-19, led to physical distancing worldwide, resulting in increased barriers to HCP access,

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including the cancellation of in-person supports. As such, patients and caregivers became increasingly reliant on non-HCP sources of information as access to care teams may have been restricted.

One group for whom the internet presents an important source of health information are caregivers of children with illness. Caregivers of children, typically their parents, play an important role in optimising child health (Guerra et al., 2011; Sultan et al., 2016), mediating HCP communication, disease management and decision making (Hill et al., 2014; Koch & Jones, 2018). As quick deteriorations in health status can occur in many chronic childhood illnesses, such as type one diabetes and asthma (Gentles et al., 2010), caregivers must continually monitor child health, relying on observation and intuition to determine when HCP support is needed. Often such caregivers require additional information to supplement that provided by HCPs (Baumann et al., 2020; Lwoga & Mosh, 2013). As caregivers of children encounter numerous logistic, financial and time barriers (Gutiérrez-Colina et al., 2017), the speed and accessibility of online health information may be of particular value to this group. Further benefits include gaining an increased understanding of child health (Alsaadi, 2012; Mertan et al., 2021), treatment (Nogueira et al., 2009) and decision support (DeMartini et al., 2013). Online peer support groups are also positive sources of information, support, stress reduction (Gundersen, 2011) and social inclusion (Newman et al., 2019).

It is clear however that limitations exist when seeking information online, including difficulties accessing appropriate, high-quality and relevant health content (Knapp et al., 2011) and the risk of obtaining inaccurate information (Daraz et al., 2019). This may contribute to inappropriate health care seeking and treatment, and increased anxiety (Lleras de Frutos et al., 2020). Goldman and Macpherson (2006) noted that 94% of caregivers of children could not source needed health information online. While the ease of accessing information may have increased in more recent years, it is likely that barriers to access still exist. Search engines, while proficient at identifying large volumes of information, do not provide simple access to relevant health information (Eysenbach & Köhler, 2002; Taira et al., 2020). Often individuals have low search tolerance, and only explore the first links presented (Eysenbach & Köhler, 2002). Furthermore, the quality of online health information may be questionable, with the scientific basis of findings often not readily accessible (Daraz et al., 2019; Son et al., 2018; Sun et al., 2019). This necessitates sufficient health literacy in users to determine whether to act or accept findings (D'Alessandro et al., 2001), a feat impeded by technical terms or jargon (Benigeri & Pluye, 2003).

While access to timely, relevant information can empower caregivers of children, the absence of sufficient information can increase parental stress (Jackson et al.,

Key Messages

- The internet is the most common source of health information for caregivers of children, with some differences among demographic groups (income, age, level of education).
- Internet-based sources inspire similar levels of confidence, effort and frustration when compared to other health information sources.
- Caregivers of children who sourced information from health care providers were more likely to experience confidence, and caregivers who sourced information from books or literature were much more likely to report high levels of effort.
- It is possible that for some demographic groups of caregivers in particular, health care providers should play a role in reducing barriers to using online health information.

2007). Caregivers are also often hesitant to discuss uncovered online health information with HCPs (Kim et al., 2017; Kubb & Foran, 2020). This is of concern as inaccuracies may not be corrected, posing risk. Further, concerns regarding equality of health care access across population sub-groups have been raised. Those with higher socioeconomic status are more likely to benefit from digital technologies, an effect termed the 'digital divide' (Parsons & Hick, 2008). Individual skills in accessing and navigating the internet, or lack thereof, contributes to this divide (Garcia, 2003). Further, decreased ability to leverage digital technology to maximise individual benefits has been noted (Fox & Connolly, 2018; Livingstone & Helsper, 2008). While social media and online communities present more accessible information to caregivers with lesser health or digital literacy (Gold et al., 2012), information from these communities may not be accurate or appropriate. While the internet may decrease anxiety through timely access to information, prerequisite digital and health literacy skills, in addition to confidence and effort, are needed to obtain information in this manner.

A systematic review of health-related internet use among informal caregivers of children and adolescents examined prevalence, predictors and perceived barriers of internet use for health information (Park et al., 2016). Prevalence of internet use varied considerably between 11% and 90%, depending upon definition and measurement used. Primary uses included obtaining disease-specific information to facilitate decision support, and social support via online peer groups. Lower education negatively correlated with use of the internet for health

information, suggesting an impact of the digital divide. However, participants here were not representative of the diverse population of caregivers, particularly regarding gender, race, employment and education. As such, there is a need for research using more representative samples to examine the impact of socio-economic factors on the use of the internet to seek health information for caregivers of children. While technological advances are generally viewed positively, the wider societal impact of seeking health information online requires further analysis (Barclay et al., 2014).

OBJECTIVES

This study seeks to examine the experiences and sources of health information seeking for caregivers of children, as compared to other caregivers and non-caregivers. First, the impact of socio-demographic factors on the use of the internet to obtain health information is explored. Secondly, the relationship between use of internet for health information and perceptions of having health information needs met is examined. Specifically, we sought to establish whether the source of health information would be associated with perceived efficacy, confidence and frustration in seeking health information for caregivers.

MATERIALS AND METHODS

Study design

This study is based on data obtained from the 2019 Health Information National Trends Survey (HINTS) which is a nationally representative United States based survey of civilian non-institutionalised adults. This survey, administered by the National Institute of Health and conducted bi-annually, examines health-related topics and behaviours, attitudes and awareness. Since 2017, the HINTS has sought to examine health information seeking behaviours and the use of technology in health. The current study examines responses to sections on Health Information along with demographic information for caregivers. Ethical approval for this analysis was obtained (reference: SRESC-2020-2408297).

Participants

A total of 5438 individuals participated in the 2019 HINTS survey, of which 4.8% ($n = 247$) were caregivers of children. Caregivers of children were identified if they responded 'yes' to the question: 'Are you currently caring

for or making health care decisions for someone with a medical, behavioural, disability, or other condition?' and selected 'caring for a child'.

Measures

Demographic information

Data were gathered on participants' marital status, gender, banded combined annual pre-tax income, race/ethnicity, age and highest level of education (less than high school, high school, some college, bachelor's degree or post-baccalaureate degree).

Source of health information

Two aspects of health information source were examined: actual and hypothetical use of internet for health information. Actual use was defined as the primary source used most recently to seek health information. Hypothetical source of health information was determined based on what respondents said they would use should they need to seek health information. Health information sources included one of four categories: (1) books/literature; (2) friends and family; (3) HCPs; and (4) online sources.

Self-efficacy in health information seeking

This was measured using a single item asking respondents to self-report how confident they were that they could get information about health or medical topics if needed, on a five-point Likert scale (from 1 = not confident at all to 5 = completely confident).

Effort in health information seeking

This was measured using a single item asking respondents to self-report how effortful they felt it was to seek health or medical information, on a four-point Likert scale (from 1 = strongly agree to 4 = strongly disagree).

Frustration in health information seeking

This was measured using a single item asking respondents to self-report how frustrating they felt it was to seek health or medical information, on a four-point Likert scale (from 1 = strongly agree to 4 = strongly disagree).

Data analysis

The complex samples application of the Statistical Package for Social Sciences (SPSS) was used to examine the research questions due to the use of stratification within sampling. Specifically, to ensure representation of minority sub-populations, two explicit sampling strata were used for this HINTs cycle, one which consisted of addresses from areas with high minority populations and the second which had poor volumes of individuals from minority groups. The high minority sample was oversampled to increase the representation of minority sub-population groups. Full sample weights were used due to complexity of sampling methods to ensure accurate calculations of national population estimates and to compute standard errors. Descriptive analysis was used to examine the source of health information and self-efficacy, effort and frustration in health information seeking. Multiple logistic regression analyses were used to examine whether the actual or hypothetical source of health information could be explained by demographic variables with sequential Bonferroni scores used. General linear model analysis was conducted to examine the relationships between frustration, effort and confidence and source of health information for caregivers of children and to examine whether the trends observed held for other caregivers.

RESULTS

Demographic information

For caregivers of children, 30.3% ($n = 48$) cared for children with mental health, behavioural or substance abuse issues, 22.1% ($n = 35$) cared for children with neurological/developmental concerns, while 12% ($n = 19$) did not know how to categorise their child's condition. The remainder ($n = 145$, 35.6%) cared for children with a range of other health conditions. See Table 1 for additional detail, which also includes comparisons with caregivers of adults ($n = 410$).

Caregivers of children were predominantly aged between 35 and 49 (41.8%), compared to caregivers of adults (13.5%) and non-caregivers (24.8%) in this age group. Gender was consistent across caregiver groups, though there were more female caregivers of children (57.8%). Caregivers of children were slightly more likely to have completed at least some college education (54.9%) in comparison to caregivers of adults (41.6%), and non-caregivers (43.4%). Household income did not vary largely across caregiver groups. Caregivers of children were most likely married (64.3%) and white (61.8%). Additional demographic information is displayed in Table 2.

TABLE 1 Caregiver type by child health condition

Caregiver type	Percentage of HINTS sample	Cancer	Alzheimer's, dementia, forgetfulness	Orthopaedic/musculoskeletal	Mental health Behavioural issues	Other chronic conditions	Neurological/developmental issues	Acute conditions	Ageing/ageing related health issues	Not sure/do not know	Multiple caregiving conditions selected	Other
Caregivers of children	4.8% ($n = 247$)	0%	0%	1.2% ($n = 2$)	30.3% ($n = 48$)	3.8% ($n = 6$)	22.1% ($n = 35$)	0.00%	0%	1.2% ($n = 19$)	31.1% ($n = 49$)	34.1% ($n = 54$)
Caregivers of adults	8% ($n = 410$)	3.1% ($n = 17$)	8.3% ($n = 42$)	4.3% ($n = 23$)	2.9% ($n = 21$)	6.7% ($n = 33$)	3.4% ($n = 25$)	0.2% ($n = 1$)	5.2% ($n = 25$)	1.6% ($n = 7$)	60.8% ($n = 309$)	3.6% ($n = 23$)
Multiple caregivers	1.6% ($n = 85$)	2.6% ($n = 2$)	2.5% ($n = 2$)	1.4% ($n = 1$)	1.2% ($n = 4$)	7.7% ($n = 6$)	2.6% ($n = 2$)	0	2.6% ($n = 2$)	6.5% ($n = 5$)	66.3% ($n = 51$)	6.5% ($n = 5$)
Non-caregivers	85.6% ($n = 4413$)											

TABLE 2 Demographic information by caregiver type

Demographic factors	Caregivers of children	Caregivers of adults	Non-caregivers
Age			
18–34	20.0%	10.8%	26.7%
35–49	41.8%	13.5%	24.8%
50–64	32.1%	55.5%	29.7%
64–74	5.2%	11.7%	11.6%
75+	0.9%	8.4%	7.2%
Gender			
Male	42.2%	46.3%	48.7%
Female	57.8%	53.7%	51.3%
Education			
<High school	0.7%	1.3%	4.8%
High school	9.5%	19.9%	16.7%
Some college	54.9%	41.6%	43.3%
Bachelor's degree	18.8%	19.3%	21.2%
Post-baccalaureate degree	16.1%	18.0%	13.9%
Household income			
<\$20,000	10.5%	13.4%	13.7%
\$20,000–\$35,000	7.7%	5.7%	10.2%
\$35,000–\$50,000	11.7%	9.8%	13.7%
\$50,000–\$75,000	13.9%	19.0%	17.5%
\$75,000 or more	56.2%	52.1%	44.8%
Marital status			
Married	64.3%	68.0%	50.1%
Co-habiting	6.2%	2.3%	5.5%
Divorced/separated	9.7%	5.5%	7.5%
Widowed	1.2%	1.0%	3.1%
Single	18.5%	23.1%	33.8%
Ethnicity/race			
White	61.8%	68.1%	69.5%
Black	13.7%	6.5%	9.4%
Hispanic	13.7%	14.9%	13.7%
Asian	1.3%	7.6%	4.8%
Other	9.5%	2.9%	2.7%

Information on actual caregiver sources of health information is presented in Table 3. Caregivers primarily sought health information from internet sources. For caregivers of children, 79.4% used the internet to seek health information, while 45% used HCPs as an information source. Few caregivers had used literature, family or helplines as sources of health information. Of interest, all caregivers were much more likely to have used the internet as their last source of health information (75.6%) in comparison to as a hypothetical source of health information (50.2%). This

suggests that, while non-internet sources are thought to be commonly consulted for health information, in practice the internet is used more frequently.

Actual use of internet for health information

Logistic regression was performed to determine how well actual use of the internet to obtain health information

could be explained by seven variables: gender, age, education, household income, marital status, race and caregiver type. The use of internet to seek health information was treated as the reference category for all analyses. There was a statistically significant effect for the model as a whole (χ^2 [21, $N = 3048$] = 151.055, $p < 0.001$) which explained between 9.9% (Cox and Snell) and 14.5% (Nagelkerke) of the variance. A statistically significant effect for age (χ^2 [4, $N = 3048$] = 71.93, $p < 0.001$) and education (χ^2 [4, $N = 3048$] = 13.91, $p = 0.008$) were noted. Through further examination of individual factors, significant positive effects for being aged 18–34 (odds ratio [OR] = 7.47, 95% confidence interval [CI: 4.20, 13.29]), 35–49 (OR = 8.78, 95% CI [5.08, 15.19]), 50–64 (OR = 5.5, 95% CI [3.06, 9.89]) and 64–74 (OR = 3.86, 95% CI [2.35, 6.32]) were observed. Strongest effects were observed for being aged 35–49 and 18–34, suggesting younger age groups were most likely to use the internet for health information. As illustrated by the OR of less than 1, those who had attended high school (OR = 0.28, 95% CI [0.13, 0.62]), completed high school (OR = 0.57, 95% CI [0.33, 0.98]) or completed some college education (OR = 0.57, 95% CI [0.35, 0.93]) were less likely to have used the internet for health information than those with higher educational attainment. A significant positive effect was noted for those earning \$50,000 to <\$75,000 (OR = 1.64, 95% CI [0.97, 2.75]). No significant effects for caregiver type were noted.

Hypothetical use of internet for health information

Logistic regression analyses were performed to determine how hypothetical use of internet to obtain health information could be explained by demographic variables or caregiver type. There was a statistically significant effect for the model as a whole (χ^2 [21, $N = 3965$] = 153.937, $p < 0.001$) which explained between 6.8% (Cox and Snell) and 9.1% (Nagelkerke) of the variance. A statistically significant effect for age (χ^2 [4, $N = 3965$] = 55.80, $p < 0.001$) and education (χ^2 [4, $N = 3965$] = 27.792, $p < 0.001$) again were noted. Through further examination of individual factors, those aged 18–34 (OR = 0.21, 95% CI [0.14, 0.34]), 35–49 (OR = 0.23, 95% CI [0.15, 0.36]), 50–64 (OR = 0.28, 95% CI [0.18, 0.43]) and 64–74 (OR = 0.43, 95% CI [0.28, 0.66]) were less likely to see the internet as their hypothetical information source in comparison to other age groups. As indicated by the OR greater than 1, those who had completed less than high school (OR = 3.9, 95% CI [2.14, 7.10]), were a high school graduate (OR = 1.98, 95% CI [1.32, 2.97]) or had completed some college education (OR = 1.85, 95% CI

TABLE 3 Sources of health information by caregiver type

Caregiver type	Actual use of internet for health information		Hypothetical use of internet for health information								
	Internet	Non-internet	Internet	Non-internet	Books / brochure / library	Family	Friend	HCP	Internet	Telephone helpline /cancer org	Other
Caregivers of children	75.6%	24.4%	53.5%	46.5%	3.1%	1.3%	0.2%	45.0%	50.2%	0.2%	0.3%
Caregivers of adults	79.4%	20.6%	50.2%	49.8%	1.3%	3.9%	0.2%	39.6%	53.5%	0.0%	1.5%
Multiple caregivers	87%	13%	53.3%	46.7%	0/7	1.7%	0.1%	35.1%	53.7%		9.1%
Non-caregivers	71.9%	28.1%	54.3%	45.7%	2.3%	4.8%	0.5%	44.3%	45.7%	0.5%	1.4%

[1.31, 2.63]) were more likely to choose the internet as a hypothetical source of information. This suggests that those with less education see the internet as a viable source of health information.

Sources of health information and health information needs

For caregivers of children, seeking health information was associated with low frustration ($M = 2.95$, $SE = 0.09$) and effort ($M = 2.95$, $SE = 0.25$). Generally, high levels of confidence in seeking information were also observed ($M = 2.26$, $SE = 0.21$). Mean scores were in line with those observed for other caregivers (Table 4).

General linear model analysis was conducted to examine the relationships between frustration, effort and confidence with source of health information for caregivers of children. A statistically significant effect for source of health information on confidence was found (Wald $F [3, N = 3644] = 19.753$, $p < 0.001$), with approximately 10.4% of variance explained according to the R^2 value. Analysis of parameter estimates suggested a significant negative effect for use of both friends and family ($t = -3.17$, $p = 0.002$) and HCP ($t = -3.57$, $p < 0.001$) suggesting caregivers of children who sourced information in this manner were more confident in this information.

Similarly, a statistically significant effect for source of health information on effort (Wald $F [3, N = 3616] = 14.38$, $p = 0.002$) and frustration (Wald $F [3, N = 3531] = 21.03$, $p < 0.001$) were noted for caregivers of children. However, only a very small percentage of variance was explained by either according to the R^2 value (effort = 2.8%, frustration = 3.6%). Analysis of parameter estimates suggested a significant positive effect for use of friends and family for both effort ($t = 3.67$, $p < 0.001$) and frustration ($t = 4.41$, $p < 0.001$) suggesting caregivers of children who sourced information in this manner found it less effortful and less frustrating.

To examine whether the trends observed held for other caregivers, general linear analyses were repeated for this group. For confidence, there was no significant effect for the model as a whole (Wald $F [6, N = 3644] = 9.99$, $p = 0.125$). No significant effects for individual parameters were noted, however caregivers of children were much more negatively associated with confidence, suggesting somewhat greater confidence in health information seeking for this population, though not significant. For frustration, there was no significant effect for the model as a whole (Wald $F [6, N = 3531] = 4.22$, $p = 0.646$). No significant effects for individual parameters were noted. For effort, there was a statistically significant effect for the model as a whole (Wald $F [6, N = 3616] = 13.02$, $p = 0.03$). However, only 1.5% of the variance in the model was explained as per R^2 values. There was no significant effect for caregivers (Wald $F [3, N = 3616] = 3.78$, $p = 0.29$), though a significant effect for health information source (Wald $F [3, N = 3616] = 9.92$, $p < 0.001$) was noted with significant negative effects for books/literature ($t = -2.77$, $p = 0.006$). This suggests increased effort across caregivers who use this source of health information (see Tables A1–A4 for detailed analysis).

DISCUSSION

This study sought to examine the sources of health information used by caregivers of children, and the impact that these sources had on self-efficacy, effort and frustration in health information seeking. Across subgroups, the internet was the most common source of health information used, with several demographic factors impacting ability to access information online. Specifically, those who were younger and higher educated were more likely to use the internet for health information. Caregivers of children were generally confident in their ability to find needed health information online and reported low frustration and effort overall. Analyses showed that those

TABLE 4 Effort, frustration and self-efficacy in health information seeking

	Caregivers of children	Caregivers of adults	Multiple caregivers	Non-caregivers
Source of health info (%)				
Books/literature	4.7%	5.4%	4.9%	7.6%
Friends/Family	2.8%	3.8%	4.9%	3.8%
HCPs	16.9%	13.0%	13.1%	17.6%
Int	75.6%	77.8%	77.0%	71.0%
Frustration ^a (M)	2.95 (SE = 0.09)	2.99 (SE = 0.11)	2.6 (SE = 0.26)	2.95 (SE = 0.33)
Effort ^a (M)	2.75 (SE = 0.25)	2.99 (SE = 0.11)	2.65 (SE = 0.24)	2.84 (SE = 0.03)
Confidence ^a (M)	2.26 (SE = 0.21)	2.04 (SE = 0.76)	2.48 (SE = 0.29)	2.21 (SE = 0.167)

^aRange 1–5.

who obtained health information from HCPs were more confident in this information, while those who obtained health information from friends and family found this process to be less effortful and frustrating. However notably only a small proportion of respondents noted seeking health information in this way. Online health information seeking did not impact perceptions of self-efficacy, effort or frustration. This suggests that while the internet is the most used source of health information, it is not necessarily the least effortful or frustrating. Oppositely, results highlighted that while peers and HCPs were less commonly relied on as sources of health information, seeking information from these groups resulted in less effort and frustration. In the context of increased service digitalisation, this suggests an ongoing need for consideration of how peers and HCPs can be incorporated into digital services to support caregiver needs.

Demographic data of the present sample were broadly in line with US population norms (U.S. Census Bureau, 2018). In comparison to non-caregivers or caregivers of adults, caregivers of children were higher earners, with fewer on low incomes (i.e., earning less than \$20,000) and more on high incomes (i.e., earning over \$75,000). In comparison with caregiver demographics more specifically, the current population is in line with expected variations. Previous research suggests that 5.7% of the US population (National Alliance for Caregiving and AARP, 2020) and 4% of the European population (Eurostat, 2018) are caregivers of children with illness, compared with 4.7% of the current sample, suggesting proportionate representation. Race, average age and gender are also in line with population norms for caregivers (Eurostat, 2018; National Alliance for Caregiving and AARP, 2020). This suggests that the demographics of the current sample may be reflective of caregivers and the population more generally. The more representative sample employed in this study addresses the sample limitations of Park et al. (2016) and may allow for increased generalisation of findings.

Results highlight the dominance of the internet as a source of health information across respondents. Caregivers and non-caregivers predominantly used internet sources when last seeking health information in comparison to other sources. Usage has grown considerably when compared even to the 2017 HINTs dataset (Bangerter et al., 2019). This high utilisation is consistent with past research (Jaks et al., 2019; Kim et al., 2017; Park et al., 2016). Of note is the discrepancy between reported hypothetical and actual health information sources. Rates of non-internet hypothetical sources were two times higher than actual non-internet health information source use. This suggests that while caregivers may plan to seek information from HCPs, peers, or other sources, in practice they use the internet. Analysis of the factors which may pose as barriers

to the use of planned non-internet sources requires additional consideration to facilitate their use for those who require them. As past research has highlighted, the ubiquitous, low-cost, convenient and efficient nature of the internet (Camden & Silva, 2021; Kubb & Foran, 2020) may influence this. However, the factors impacting the discrepancy between intended and actual health information sources should be examined further.

A significant positive association for age on hypothetical use of the internet to seek health information was noted, with those aged 64–74 most likely to select this source. This suggests an interest in sourcing online health information by this age group which is not actioned in practice. This is echoed by van Deursen (2020) who found age to be positively associated with the use of the internet for health information, but negatively associated with information attainment. Ybarra and Suman (2008) found that adults over 60 were as likely to use the internet as adolescents, but frustration and inability to source needed information online significantly increased with age. Consideration of barriers encountered by this group around the use of online sources is needed to facilitate use in practice. As this study did not examine the relationship between age and frustration, further analysis of this is merited.

Decreased likelihood of both actual and hypothetical internet use was noted for caregivers with lesser education, which is consistent with past research (Park et al., 2016; van Deursen, 2020). Barriers accessing phones or internet plans associated for those with lesser education may contribute to this (Mueller et al., 2018). Education attainment has been found to be the greatest predictor of use of internet for strategic benefit (Van Deursen et al., 2011). The impact of education on internet use for health may also derive from limitations in health and fundamental literacy for this group (Chu et al., 2021; Hutchinson et al., 2016). Those with lesser education may have limited literacy skills in understanding and seeking health information, thus impacting ability to successfully use online sources of health information. Further analysis of the barriers which may be limiting use for this sub-population is needed.

Of note within present findings is the absence of associations between household income, gender or race and online sources of health information for caregivers of children, suggesting these factors did not contribute significantly to likelihood of use. Weiss et al. (2018) note that while research suggests inequalities in access to technology exist, technology itself can reduce such inequalities over time. As the internet is somewhat pervasive in comparison to other technologies, this may have reduced the impact of the digital divide in this instance. As such, research should continue to examine the impact of technological development on health for socio-economic strata over time.

A key finding of this study pertains to the importance of HCPs in the provision of health information for caregivers of children. HCPs were the second highest source of information across groups at 35%–45%. Notably, caregivers of children who sought information from HCPs were significantly more likely to express confidence in this information. No significant effects for other caregivers were noted suggesting this may be unique to caregivers of children. Past research echoes this caregiver preference for information from HCPs (Corcoran et al., 2010; Jackson et al., 2007; Khoo et al., 2008; Kubb & Foran, 2020; Lee, 2018). However, limitations to seeking health information in this manner have been highlighted. Information provided by HCPs is often forgotten or misunderstood, particularly when information is shared in large volumes or at emotional times (Friis et al., 2003; Nwaneri et al., 2014). Further, lack of HCP continuity across the illness trajectory may lead to information omission or the provision of contradictory information (McPherson et al., 2001). Time limitations may also impact HCPs ability provide fulsome information and respond to all queries (Campbell et al., 2018; Worth et al., 2000). Additionally, caregiver reluctance to discuss information retrieved from online sources with HCPs can pose problems (Kubb & Foran, 2020). While HCPs are a preferred source, it may be difficult to obtain timely, understandable information in this manner, requiring supplementation from other sources. An increasing need for the provision of health information by HCPs through online means has been noted (Plantin & Daneback, 2009; Slomian et al., 2017). Present findings highlight the need for HCP inclusion in online information sharing. Connected Health technologies, or two-way communicative technologies in health, may be an effective means to provide this HCP contact in a manner that is not cost or time intensive (Delemere & Maguire, 2020). Future online information sources for caregivers of children should consider the inclusion of HCPs where possible.

Results also highlight the important role of peers and family members on health information seeking for caregivers of children, though they were seldom used by caregivers. Only 1.3% of caregivers of children sought health information through peers or family, however, those that did were significantly more confident in health information seeking and found it less effortful and frustrating. Peers and family are important health information sources for caregivers of children (Montez, 2011). Lack of peer knowledge may impede their use for caregivers, with weakened support from family and friends in health information provision contributing to online information seeking (Plantin & Daneback, 2009). This suggests an important role of social supports in health information seeking, which requires further analysis. However, as no individual sources of online health information were analysed

within the present study, the specific role of peers for caregivers of children cannot be fully examined. It is possible, for example, that online information may have been sought from peer groups on social media, though specific data on this was not obtained.

Limitations

Several limitations to this study exist. While significant effects were found, generally low effect sizes were obtained, suggesting that effects, in practice, may be small. Second, the heterogeneity of the sample may serve as a limitation. As participants caring for children were considered as a single group, the needs of specific subgroups may have been missed. For example, the needs of those caring for a child with mental health needs will likely differ from those caring for a child with a physical illness. The nature and frequency of internet searches for health information may also change across the disease trajectory (Gundersen, 2011), which could not be captured in current findings. Future research should seek to examine caregiver groups more specifically to better capture information sources. Additionally, as this study examined a US population only, analysis in other settings is needed, particularly in non-western countries which face substantial increases in technology use and where such analyses are lacking (Poushter, 2016). A further limitation was possible selection bias, due to the participant recruitment methods used by the HINTS. As respondents were recruited online in addition to by phone and post, this may have impacted respondent's likelihood of using the internet. Sample weights were applied to minimise potential impacts of sampling methods and increase generalisability of findings. A further limitation was the broad nature of questions pertaining to uses of the internet for health. In-depth analysis of the specific information sought and its use would be beneficial. Additionally, the source of online information, its quality and associations with demographic factors should be examined. Past research suggests low-income parents caring for children tend to seek information through social media (Swindle et al., 2014) or online communities (Gold et al., 2012) which may not be based on scientific sources. Future research should examine different online health information sources and their quality of information to examine the impact on use of these sources by sub-populations.

CONCLUSION

The present analysis highlights the important role played by the internet as a source of health information for

caregivers of children. Notably, results suggest the impact of a digital divide on use of the internet for health, with those who are younger or who have completed higher levels of education more likely to have used it. This requires further analysis and action to prevent deepening inequality. Deviations between hypothetical and actual sources of health information were noted for caregivers of children, suggesting a need for analysis of factors which may be preventing use in practice. Encouragingly, caregivers of children were generally confident in their ability to seek health information, and felt it required low effort and frustration. However, while online sources of health information were most common, they did not significantly impact perceptions of self-efficacy, effort or frustration. Instead, results highlighted the positive impacts of both the health care team and peers on health information seeking, suggesting a need for future interventions to consider how access to these supports may be facilitated. As digitalisation of health continues, efforts are needed to ensure caregivers of children are supported to obtain health information in a manner which best meets their needs while minimising the impact of the digital divide.

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CONFLICT OF INTERESTS

The authors declare no conflict of interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the HINTs website directly at <https://hints.cancer.gov/data/default.aspx>.

ORCID

Emma Delemere  <https://orcid.org/0000-0003-1237-5566>

TWITTER

Emma Delemere  @EDelemere

Rebecca Maguire  @RebeccaMaguire

REFERENCES

- Alsaadi, M. M. (2012). Evaluation of internet use for health information by parents of asthmatic children attending pediatric clinics in Riyadh, Saudi Arabia. *Annals of Saudi Medicine*, 32(6), 630–636. <https://doi.org/10.5144/0256-4947.2012.630>
- Bangerter, L. R., Griffin, J., Harden, K., & Rutten, L. J. (2019). Health information-seeking behaviors of family caregivers: Analysis of the health information national trends survey.

- Journal of Medical Internet Research*, 21(1), e11237. <https://doi.org/10.2196/11237>
- Barclay, G., Sabina, A., & Graham, G. (2014). Population health and technology: Placing people first. *American Journal of Public Health*, 104(12), 2246–2247. <https://doi.org/10.2105/AJPH.2014.302334>
- Baumann, I., Jaks, R., Robin, D., Juvalta, S., & Dratva, J. (2020). Parents' health information seeking behaviour – Does the child's health status play a role? *BMC Family Practice*, 21(1), 266. <https://doi.org/10.1186/S12875-020-01342-3>
- Beckjord, E. B., Rutten, L. J. F., Squiers, L., Arora, N. K., Volckmann, L., Moser, R. P., & Hesse, B. W. (2007). Use of the internet to communicate with health care providers in the United States: Estimates from the 2003 and 2005 Health Information National Trends Surveys (HINTS). *Journal of Medical Internet Research*, 9(3), e620. <https://doi.org/10.2196/jmir.9.3.e20>
- Benigeri, M., & Pluye, P. (2003). Promises of health information on the internet shortcomings of health information on the internet. *Health Promotion International*, 18(4), 381–386. <https://doi.org/10.1093/heapro/dag409>
- Bujnowska-Fedak, M. M., Waligóra, J., & Mastalerz-Migas, A. (2019). The internet as a source of health information and services. In *Advances in experimental medicine and biology* (Vol. 1211, pp. 1–16). Springer. https://doi.org/10.1007/5584_2019_396
- Camden, C., & Silva, M. (2021). Pediatric Telehealth: Opportunities created by the COVID-19 and suggestions to sustain its use to support families of children with disabilities. *Physical and Occupational Therapy in Pediatrics*, 41(1), 1–17. <https://doi.org/10.1080/01942638.2020.1825032>
- Campbell, P., Torrens, C., Pollock, A., & Maxwell, M. (2018). *A scoping review of evidence relating to communication failures that lead to patient harm*. Glasgow Caledonia University, Glasgow.
- Chu, J. N., Sarkar, U., Rivadeneira, N. A., Hiatt, R. A., & Khoong, E. C. (2021). Impact of language preference and health literacy on health information-seeking experiences among a low-income, multilingual cohort. *Patient Education and Counseling*. <https://doi.org/10.1016/J.PEC.2021.08.028>
- Corcoran, T. B., Haigh, F., Seabrook, A., & Schug, S. A. (2010). A survey of patients' use of the internet for chronic pain-related information. *Pain Medicine*, 11(4), 512–517. <https://doi.org/10.1111/j.1526-4637.2010.00817.x>
- D'Alessandro, D. M., Kingsley, P., & Johnson-West, J. (2001). The readability of pediatric patient education materials on the world wide web. *Archives of Pediatrics and Adolescent Medicine*, 155(7), 807–812. <https://doi.org/10.1001/archpedi.155.7.807>
- Daraz, L., Morrow, A. S., Ponce, O. J., Beuschel, B., Farah, M. H., Katabi, A., Alsawas, M., Majzoub, A. M., Benkhadra, R., Seisa, M. O., Ding, J. (F.), Prokop, L., & Murad, M. H. (2019). Can patients trust online health information? A meta-narrative systematic review addressing the quality of health information on the internet. *Journal of General Internal Medicine*, 34(9), 1884–1891. <https://doi.org/10.1007/S11606-019-05109-0>
- Delemere, E., & Maguire, R. (2020). The role of connected health technologies in supporting families affected by paediatric cancer: A systematic review. *Psycho-Oncology*, 25(3), 3–15. <https://doi.org/10.1002/pon.5542>
- DeMartini, T. L., Beck, A. F., Klein, M. D., & Kahn, R. S. (2013). Access to digital technology among families coming to urban

- pediatric primary care clinics. *Pediatrics*, 132(1), e142–e148. <https://doi.org/10.1542/peds.2013-0594>
- Eurostat. (2018). *Reconciliation of work and family life - statistics*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Reconciliation_of_work_and_family_life_-_statistics
- Eysenbach, G., & Köhler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *British Medical Journal*, 324(7337), 573–577. <https://doi.org/10.1136/bmj.324.7337.573>
- Finney Rutten, L. J., Blake, K. D., Greenberg-Worisek, A. J., Allen, S. V., Moser, R. P., & Hesse, B. W. (2019). Online health information seeking among US adults: Measuring Progress toward a healthy people 2020 objective. *Public Health Reports*, 134(6), 617–625. <https://doi.org/10.1177/0033354919874074>
- Fox, G., & Connolly, R. (2018). Mobile health technology adoption across generations: Narrowing the digital divide. *Information Systems Journal*, 28(6), 995–1019. <https://doi.org/10.1111/isj.12179>
- Friis, L. S., Elverdam, B., & Schmidt, K. G. (2003). The patient's perspective: A qualitative study of acute myeloid leukaemia patients' need for information and their information-seeking behaviour. *Supportive Care in Cancer*, 11(3), 162–170. <https://doi.org/10.1007/s00520-002-0424-6>
- Garcia, D. L. (2003). Technology and social inclusion: Rethinking the digital divide by mark Warschauer. In *American Journal of Sociology*, 109, 767–768. <https://doi.org/10.1086/381987>
- Gentles, S. J., Lokker, C., & McKibbin, K. A. (2010). Health information technology to facilitate communication involving health care providers, caregivers, and pediatric patients: A scoping review. *Journal of Medical Internet Research*, 12, e22. <https://doi.org/10.2196/jmir.1390>
- Gold, J., Pedrana, A. E., Stooove, M. A., Chang, S., Howard, S., Asselin, J., Ilic, O., Batrouney, C., & Hellard, M. E. (2012). Developing health promotion interventions on social networking sites: Recommendations from the FaceSpace project. *Journal of Medical Internet Research*, 14(1), e30. <https://doi.org/10.2196/jmir.1875>
- Goldman, R. D., & Macpherson, A. (2006). Internet health information use and e-mail access by parents attending a paediatric emergency department. *Emergency Medicine Journal*, 23(5), 345–348. <https://doi.org/10.1136/emj.2005.026872>
- Guerra, N. G., Graham, S., & Tolan, P. H. (2011). Raising healthy children: Translating child development research into practice. *Child Development*, 82(1), 7–16. <https://doi.org/10.1111/j.1467-8624.2010.01537.x>
- Gundersen, T. (2011). "One wants to know what a chromosome is": The internet as a coping resource when adjusting to life parenting a child with a rare genetic disorder. *Sociology of Health and Illness*, 33(1), 81–95. <https://doi.org/10.1111/j.1467-9566.2010.01277.x>
- Gutiérrez-Colina, A. M., Lee, J. L., VanDellen, M., Mertens, A., & Marchak, J. G. (2017). Family functioning and depressive symptoms in adolescent and young adult cancer survivors and their families: A dyadic analytic approach. *Journal of Pediatric Psychology*, 42(1), 19–27. <https://doi.org/10.1093/jpepsy/jsw041>
- Hill, D. L., Miller, V., Walter, J. K., Carroll, K. W., Morrison, W. E., Munson, D. A., Kang, T. I., Hinds, P. S., & Feudtner, C. (2014). Regoaling: A conceptual model of how parents of children with serious illness change medical care goals. *BMC Palliative Care* 2014 13:1, 13(1), 1–8. <https://doi.org/10.1186/1472-684X-13-9>
- Hutchinson, N., Baird, G. L., & Garg, M. (2016). Examining the Reading level of internet medical information for common internal medicine diagnoses. *The American Journal of Medicine*, 129(6), 637–639. <https://doi.org/10.1016/J.AMJMED.2016.01.008>
- Jackson, R., Baird, W., Davis-Reynolds, L., Smith, C., Blackburn, S., & Allsebrook, J. (2007). Qualitative analysis of parents' information needs and psychosocial experiences when supporting children with health care needs. *Health Information and Libraries Journal*, 25, 31–37. <https://doi.org/10.1111/j.1471-1842.2007.00736.x>
- Jaks, R., Baumann, I., Juvalta, S., & Dratva, J. (2019). Parental digital health information seeking behavior in Switzerland: A cross-sectional study. *BMC Public Health*, 19(1), 225. <https://doi.org/10.1186/s12889-019-6524-8>
- 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. <https://doi.org/10.1111/j.1440-1754.2008.01322.x>
- Kim, H., Paige Powell, M., Bhuyan, S. S., & Bhuyan, S. S. (2017). Seeking medical information using Mobile apps and the internet: Are family caregivers different from the general public? *Journal of Medical Systems*, 41(3), 1–8. <https://doi.org/10.1007/s10916-017-0684-9>
- Knapp, C., Madden, V., Wang, H., Sloyer, P., & Shenkman, E. (2011). Internet use and eHealth literacy of low-income parents whose children have special health care needs. *Journal of Medical Internet Research*, 13(3), e75. <https://doi.org/10.2196/jmir.1697>
- Koch, K. D., & Jones, B. L. (2018). Supporting parent caregivers of children with life-limiting illness. *Children*, 5, 85. <https://doi.org/10.3390/CHILDREN5070085>
- Kubb, C., & Foran, H. M. (2020). Online health information seeking by parents for their children: Systematic review and agenda for further research. *Journal of Medical Internet Research*, 22(8), e19985. <https://doi.org/10.2196/19985>
- Lee, H. S. (2018). A comparative study on the health information needs, seeking and source preferences among mothers of young healthy children: American mothers compared to recent immigrant Korean mothers. *Information Research*, 23(4), 4.
- Livingstone, S., & Helsper, E. J. (2008). Parental mediation of children's internet use. *Journal of Broadcasting and Electronic Media*, 52(4), 581–599. <https://doi.org/10.1080/08838150802437396>
- Lleras de Frutos, M., Casellas-Grau, A., Sumalla, E. C., de Gracia, M., Borràs, J. M., & Ochoa Arnedo, C. (2020). A systematic and comprehensive review of internet use in cancer patients: Psychological factors. *Psycho-Oncology*, 29, 6–16. <https://doi.org/10.1002/pon.5194>
- Lwoga, E. T., & Moshia, N. F. (2013). Information seeking behaviour of parents and caregivers of children with mental illness in Tanzania. *Library Review*, 62(8), 567–584. <https://doi.org/10.1108/LR-10-2012-0116>
- McPherson, C. J., Higginson, I. J., & Hearn, J. (2001). Effective methods of giving information in cancer: A systematic literature review of randomized controlled trials. *Journal of Public Health Medicine*, 23(3), 227–234. <https://doi.org/10.1093/pubmed/23.3.227>

- Mertan, E., Croucher, L., Shafran, R., & Bennett, S. D. (2021). An investigation of the information provided to the parents of young people with mental health needs on an internet forum. *Internet Interventions*, 23, 100353. <https://doi.org/10.1016/J.INVENT.2020.100353>
- Mueller, E. L., Cochrane, A. R., Bennett, W. E., & Carroll, A. E. (2018). A survey of mobile technology usage and desires by caregivers of children with cancer. *Pediatric Blood and Cancer*, 65(11), e27359. <https://doi.org/10.1002/pbc.27359>
- National Alliance for Caregiving and AARP (2020). Caregiving in the U.S. <https://www.caregiving.org/caregiving-in-the-us-2020/>
- Newman, K., Wang, A. H., Wang, A. Z. Y., & Hanna, D. (2019). The role of internet-based digital tools in reducing social isolation and addressing support needs among informal caregivers: A scoping review. *BMC Public Health*, 19(1), 1–12. <https://doi.org/10.1186/s12889-019-7837-3>
- Nogueira, J. F., Hermann, D. R., Silva, M. L. S., Santos, F. P., Pignatari, S. S. N., & Stamm, A. C. (2009). Is the information available on the web influencing the way parents see ENT surgical procedures? *Brazilian Journal of Otorhinolaryngology*, 75(4), 517–523. [https://doi.org/10.1016/S1808-8694\(15\)30490-0](https://doi.org/10.1016/S1808-8694(15)30490-0)
- Nwaneri, U. D., Oviawe, O. O., & Oviawe, O. (2014). Do caregivers receive health information on their children's illnesses from healthcare providers while hospitalised? *The Nigerian Postgraduate Medical Journal*, 21(4), 279–284. <https://europepmc.org/article/med/25633444>
- Park, E., Kim, H., & Steinhoff, A. (2016). Health-related internet use by informal caregivers of children and adolescents: An integrative literature review. *Journal of Medical Internet Research*, 18(3), E57. <https://doi.org/10.2196/JMIR.4124>
- Parsons, C., & Hick, S. (2008). Moving from the digital divide to digital inclusion. *Currents: Scholarship in the Human Services*, 7(2), 1–16. <https://journalhosting.ucalgary.ca/index.php/currents/article/view/15892>
- Plantin, L., & Daneback, K. (2009). Parenthood, information and support on the internet. A literature review of research on parents and professionals online. *BMC Family Practice*, 10, 34. <https://doi.org/10.1186/1471-2296-10-34>
- Poushter, J. (2016). Smartphone ownership and internet usage continues to climb in emerging economies, Pew Research Center, Pew Global. <https://www.pewresearch.org/global/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/>
- Powell, J., Chiu, T., & Eysenbach, G. (2008). A systematic review of networked technologies supporting carers of people with dementia. *Journal of Telemedicine and Telecare*, 14(3), 154–156. <https://doi.org/10.1258/jtt.2008.003018>
- Slomian, J., Bruyère, O., Reginster, J. Y., & Emonts, P. (2017). The internet as a source of information used by women after childbirth to meet their need for information: A web-based survey. *Midwifery*, 48, 46–52. <https://doi.org/10.1016/j.midw.2017.03.005>
- Son, H. M., Je, M., & Sohn, Y. S. (2018). Quality evaluation of online health information related to young child. *Child Health Nursing Research*, 24(1), 91–100. <https://doi.org/10.4094/chnr.2018.24.1.91>
- Sultan, S., Leclair, T., Rondeau, É., Burns, W., & Abate, C. (2016). A systematic review on factors and consequences of parental distress as related to childhood cancer. *European Journal of Cancer Care*, 25(4), 616–637. <https://doi.org/10.1111/ECC.12361>
- Sun, Y., Zhang, Y., Gwizdka, J., & Trace, C. B. (2019). Consumer evaluation of the quality of online health information: Systematic literature review of relevant criteria and indicators. *Journal of Medical Internet Research*, 21, e12522. <https://doi.org/10.2196/12522>
- Swindle, T. M., Ward, W. L., Whiteside-Mansell, L., Bokony, P., & Pettit, D. (2014). Technology use and interest among low-income parents of young children: Differences by age group and ethnicity. *Journal of Nutrition Education and Behavior*, 46(6), 484–490. <https://doi.org/10.1016/j.jneb.2014.06.004>
- Taira, K., Murayama, T., Fujita, S., Ito, M., Kamide, K., & Aramaki, E. (2020). Comparing medical term usage patterns of professionals and search engine and community question answering service users in Japan: Log analysis. *Journal of Medical Internet Research*, 22(4), e13369. <https://doi.org/10.2196/13369>
- U.S. Census Bureau. (2018). 2018 Population estimates by age, sex, race and hispanic origin. Suitland, MD: U.S. Census Bureau. <https://www.census.gov/newsroom/press-kits/2019/detailed-estimates.html>
- van Deursen, A. J. A. M. (2020). Digital inequality during a pandemic: Quantitative study of differences in COVID-19-related internet uses and outcomes among the general population. *Journal of Medical Internet Research*, 22(8), e20073. <https://doi.org/10.2196/20073>
- Van Deursen, A. J. A. M., Van Dijk, J. A. G. M., & Peters, O. (2011). Rethinking internet skills: The contribution of gender, age, education, internet experience, and hours online to medium- and content-related internet skills. *Poetics*, 39, 125–144. <https://doi.org/10.1016/j.poetic.2011.02.001>
- Weiss, D., Rydland, H. T., Øversveen, E., Jensen, M. R., Solhaug, S., & Krokstad, S. (2018). Innovative technologies and social inequalities in health: A scoping review of the literature. *PLoS ONE*, 13, e0195447. <https://doi.org/10.1371/journal.pone.0195447>
- Worth, A., Tierney, A. J., & Watson, N. T. (2000). Discharged from hospital: Should more responsibility for meeting patients' and carers' information needs now be shouldered in the community? *Health and Social Care in the Community*, 8(6), 398–405. <https://doi.org/10.1046/j.1365-2524.2000.00265.x>
- Ybarra, M., & Suman, M. (2008). Reasons, assessments and actions taken: Sex and age differences in uses of internet health information. *Health Education Research*, 23(3), 512–521. <https://doi.org/10.1093/her/cyl062>
- Ziebland, S., & Wyke, S. (2012). Health and illness in a connected world: How might sharing experiences on the internet affect people's health? *Milbank Quarterly*, 90, 219–249. <https://doi.org/10.1111/j.1468-0009.2012.00662.x>

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APPENDIX A

TABLE A1 Logistic regression actual use of internet for health information

	B	SE	T	df	Sig.	Exp (B)	95% Confidence interval	
							Lower	Upper
(Intercept)	-0.53	0.96	-0.55	292	0.58	0.59	0.09	3.89
Age								
18-34	2.01	0.29	6.88	292	0.00	7.47	4.20	13.29
35-49	2.17	0.28	7.81	292	0.00	8.78	5.08	15.19
50-64	1.70	0.30	5.71	292	0.00	5.50	3.06	9.89
64-74	1.35	0.25	5.37	292	0.00	3.86	2.35	6.32
75+	0.000	-	-	-	-	1	-	-
Education								
Less than high school	-1.28	0.40	-3.18	292	0.002	0.28	0.13	0.62
High school graduate	-0.57	0.28	-2.05	292	0.041	0.57	0.33	0.98
Some college	-0.56	0.25	-2.28	292	0.023	0.57	0.35	0.93
Bachelor's degree	-0.09	0.23	-0.38	292	0.706	0.92	0.59	1.43
Post-baccalaureate degree	0.000a	-	-	-	-	1	-	-
Gender								
Male	-0.04	0.18	-0.21	292	0.835	0.96	0.67	1.38
Female	0.000	-	-	-	-	1	-	-
Marital status								
Married/cohabitating	0.04	0.21	0.20	292	0.84	1.04	0.69	1.58
Single/divorced/separated	0.000	-	-	-	-	1	-	-
Race								
White	0.83	0.60	1.38	292	0.17	2.29	0.70	7.46
Black	0.19	0.63	0.30	292	0.76	1.21	0.35	4.14
Hispanic	0.61	0.63	0.97	292	0.33	1.84	0.53	6.37
Asian	1.24	0.67	1.86	292	0.06	3.45	0.93	12.8
Other	0.000	-	-	-	-	1	-	-
House hold income								
Less than \$20,000	-0.02	0.31	-0.06	292	0.95	0.98	0.54	1.79
\$20,000-<\$35,000	-0.19	0.41	-0.47	292	0.64	0.83	0.37	1.84
\$35,000-<\$50,000	-0.11	0.34	-0.33	292	0.74	0.90	0.46	1.74
\$50,000-<\$75,000	0.49	0.26	1.87	292	0.06	1.64	0.97	2.75
\$75,000 or more	0.000	-	-	-	-	1	-	-
Caregiver type								
Children	-0.28	0.73	-0.39	292	0.70	0.76	0.18	3.18
Adults	-0.21	0.72	-0.29	292	0.77	0.81	0.20	3.32
Non-caregiver	-0.49	0.67	-0.73	292	0.46	0.61	0.16	2.30
Multiple	0.000	-	-	-	-	1	-	-

TABLE A2 Hypothetical regression actual use of internet for health information

	B	SE	T	df	Sig.	Exp (B)	95% Confidence interval	
							Lower	Upper
(Intercept)	-0.43	0.65	-0.66	294	0.51	1.53	0.43	5.54
Age								
18-34	1.54	0.24	6.55	294	0.00	0.21	0.14	0.34
35-49	1.46	0.22	6.64	294	0.00	0.23	0.15	0.36
50-64	1.28	0.22	5.84	294	0.00	0.28	0.18	0.43
64-74	0.85	0.22	3.85	294	0.00	0.43	0.28	0.66
75+	0.000	-	-	-	-	1.00	-	-
Education								
Less than high school	-1.36	0.31	-4.46	294	0.00	3.90	2.14	7.10
High school graduate	-0.68	0.21	-3.30	294	0.00	1.98	1.32	2.97
Some college	-0.62	0.18	-3.48	294	0.00	1.85	1.31	2.63
Bachelor's degree	-0.28	0.16	-1.74	294	0.08	1.33	0.96	1.83
Post-baccalaureate degree	0.000	-	-	-	-	1.00	-	-
Gender								
Male	-0.08	0.13	-0.58	294	0.56	1.08	0.83	1.40
Female	0.000	-	-	-	-	1.00	-	-
Marital status								
Married/cohabitating	-0.01	0.15	-0.04	294	0.97	1.01	0.76	1.34
Single/divorced/separated	0.000	-	-	-	-	1.00	-	-
Race								
White	-0.31	0.45	-0.70	294	0.49	1.37	0.57	3.28
Black	-0.76	0.47	-1.62	294	0.11	2.13	0.85	5.33
Hispanic	-0.10	0.46	-0.22	294	0.82	1.11	0.45	2.73
Asian	-0.17	0.54	-0.32	294	0.75	1.19	0.41	3.40
Other	0.000	-	-	-	-	1.00	-	-
House hold income								
Less than \$20,000	-0.12	0.23	-0.54	294	0.59	1.13	0.72	1.77
\$20,000-<\$35,000	-0.11	0.26	-0.44	294	0.66	1.12	0.68	1.85
\$35,000-<\$50,000	0.11	0.22	0.50	294	0.62	0.90	0.58	1.38
\$50,000-<\$75,000	0.02	0.18	0.09	294	0.93	0.98	0.69	1.41
\$75,000 or more	0.000	-	-	-	-	1.00	-	-
Caregiver type								
Children	-0.18	0.41	-0.43	294	0.67	1.19	0.53	2.66
Adults	0.23	0.44	0.52	294	0.61	0.80	0.34	1.88
Non-caregiver	-0.02	0.41	-0.04	294	0.97	1.02	0.46	2.27
Multiple	0.000	-	-	-	-	1	-	-

TABLE A3 Statistical analysis of effort, frustration and self-efficacy in health information seeking

	B	SE	T	df	Sig.	Design effect	95% Confidence interval	
							Lower	Upper
Confidence (1 = confident, 5 = not)								
Books/lit	-0.43	0.29	-1.47	294	0.14	1.21	-1.01	0.15
People	-0.79	0.25	-3.17	294	0.00	1.43	-1.28	-0.30
HCPs	-0.64	0.18	-3.57	294	0.00	2.26	-1.00	-0.29
Int	0.000	-	-	-	-	-	-	-
Frustration (1 = Frust, 4 = not)								
Books/lit	-0.09	0.31	-0.28	294	0.78	1.00	-0.70	0.52
People	0.88	0.20	4.41	294	0.00	0.77	0.49	1.28
HCPs	0.30	0.22	1.39	294	0.17	1.77	-0.12	0.72
Int	0.000	-	-	-	-	-	-	-
Effort								
Books/lit	-0.10	0.25	-0.42	294	0.67	0.93	-0.59	0.38
People	0.93	0.25	3.67	294	0.00	1.01	0.43	1.42
HCPs	0.09	0.24	0.38	294	0.71	2.30	-0.38	0.57
Int	0.000	-	-	-	-	-	-	-

TABLE A4 Statistical analysis of effort, frustration and self-efficacy in health information seeking across caregivers

	B	SE	T	df	Sig.	Design effect	95% Confidence interval	
							Lower	Upper
Confidence (1 = confident, 5 = not)								
Books/lit	0.00	0.12	-0.01	294	0.99	3.47	-0.23	0.23
People	0.06	0.20	0.31	294	0.76	5.24	-0.34	0.46
HCPs	-0.16	0.09	-1.85	294	0.07	4.42	-0.33	0.01
Int	0.000	-	-	-	-	-	-	-
Caregiver								
Children	-0.35	0.22	-1.61	294	0.11	4.15	-0.77	0.08
Adults	-0.09	0.21	-0.42	294	0.68	4.09	-0.50	0.33
Non-caregivers	-0.17	0.20	-0.86	294	0.39	4.37	-0.55	0.22
Multiple	0.000	-	-	-	-	-	-	-
Frustration (1 = Frust, 4 = not)								
Books/lit	-0.17	0.13	-1.30	294	0.20	3.72	-0.42	0.09
People	0.12	0.19	0.60	294	0.55	4.02	-0.26	0.49
HCPs	-0.10	0.09	-1.02	294	0.31	3.66	-0.28	0.09
Int	0.000	-	-	-	-	-	-	-
Caregiver								
Children	0.28	0.31	0.88	294	0.38	4.98	-0.34	0.89
Adults	0.23	0.31	0.74	294	0.46	4.82	-0.38	0.83
Non-caregivers	0.24	0.29	0.81	294	0.42	5.36	-0.34	0.82
Multiple	0.000	-	-	-	-	-	-	-
Effort								
Books/lit	-0.39	0.14	-2.77	294	0.01	5.03	-0.67	-0.11
People	0.03	0.19	0.16	294	0.87	4.91	-0.35	0.41
HCPs	-0.13	0.09	-1.41	294	0.16	3.76	-0.30	0.05
Int	0.000	-	-	-	-	-	-	-
Caregiver								
Children	0.33	0.31	1.05	294	0.30	5.14	-0.29	0.95
Adults	0.05	0.28	0.16	294	0.87	4.37	-0.51	0.60
Non-caregivers	0.17	0.29	0.57	294	0.57	5.51	-0.41	0.74
Multiple	0.000	-	-	-	-	-	-	-