E-Health Use in African American Internet Users: Can New Tools Address Old Disparities?

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Abstract

Objective: *Web-based health information may be of particular value among the African American population due to its potential to reduce communication inequalities and empower minority groups. This study explores predictors of e-health behaviors and activities for African American Internet users.* ***Materials and Methods:*** *We used the 2010 Pew Internet and American Life Health Tracking Survey to examine sociodemographic and health status predictors of e-health use behaviors among African Americans. E-health use behaviors included searching for e-health information, conducting interactive health-related activities, and tracking health information online.* ***Results:*** *In the African American subsample, 55% (n = 395) were at least "occasional" Internet users. Our model suggests that searching for health information online was positively associated with being helped/knowing someone helped by online information (odds ratio [OR] = 5.169) and negatively associated with lower income (OR = 0.312). Interactive health activities were associated with having a college education (OR = 3.264), being 65 years of age or older (OR = 0.188), having a family member living with chronic conditions (OR = 2.191), having a recent medical crisis (OR = 2.863), and being helped/knowing someone helped by online information (OR = 8.335). E-tracking behaviors were significantly stronger among African Americans who had health insurance (OR = 3.907), were helped/knowing someone helped by online information (OR = 4.931), and were social media users (OR = 4.799).* ***Conclusions:*** *Findings suggest significant differences in e-health information-seeking behaviors among African American Internet users—these differences are mostly related to personal and family health concerns and experiences. Targeted online e-health resources and interventions can educate and empower a significant subset of the population.*

Key words: *e-health, African Americans, Internet use*

Introduction

The number of individuals in the United States seeking health information has dramatically increased over the past decade, and positive correlations among health information seeking, patient empowerment, and self-management have been well documented in the healthcare literature.[1] However, socially disadvantaged populations, including those in lower socioeconomic groups and minorities, are less likely to seek health information[2,3] for reasons including communication inequalities, mistrust of the medical community, and inequalities in access to care.[3–6] As the Internet has grown as a preferred source of health information,[2,7–10] there have been significant concerns regarding whether the "digital divide" would further exacerbate existing racial disparities in health information seeking and access.[11,12] However, it has also been argued that online health information still holds the potential to motivate minorities to actively participate in their healthcare.[13]

Internet health information seeking is part of the larger construct of e-health use, defined as the use of health services and information disseminated through the Internet and related technologies.[14] Online health information can provide users with knowledge to improve self-care,[15] engage in information exchange and community support,[16] and increase their understanding of their medical conditions.[17] Such information can be accessed in an anonymous manner, which may be particularly desirable for sensitive health topics.[18] Online health information also supports healthcare decision-making, including when to seek care and what treatments to consider.[7,11] It is important that the Internet provides an easy access to healthcare information for those with poor health status. Individuals with poorer health status are more frequent users of e-health information,[19] with evidence suggesting that those with chronic conditions and suffering from long-term illness or disability are more likely to visit health sites.[11,19,20]

African American use of the Internet has grown from 35% in June 2000 to 71% in August 2011,[21] and African Americans actively surf the Web to seek job opportunities, civic and interpersonal interaction, and entertainment, as well as health information.[5,22–24] Web-based health information may have particular value in the African American population because of its potential to reduce communication inequalities,[3] improve relationships between social status and health,[25] and support empowerment.[26] Although the advantages of using health information online can be particularly appealing to minorities who have less access to traditional medical advice, limited research has been done on predictors of e-health behaviors and activities for minority populations. Instead, much of the previous research on both health information-seeking behaviors and e-health has been limited in scope, focusing primarily on between-group sociodemographic differences rather than predictors within sociodemographic groups.[27] This analysis explores predictors of use of online health information among African American Internet users with the goal of informing design and implementation of Internet-based interventions for minority health promotion and health disparity reduction.

Materials and Methods

We used the 2010 Pew Internet and American Life Health Tracking Survey to examine predictors of e-health behaviors among African Americans who used the Internet.[28] The survey was representative of all adults in 2010 in the continental United States who have access to either a landline or a cell phone and used a random sample of the population, 18 years of age and older ($n = 3{,}001$). The response rate for the landline sample was 13.6%. The response rate for the cellular sample was 17.0%. The dataset was weighted to match sample demographics to population parameters.[8] The total African American subsample was 718 respondents. Only those African American respondents who use the Internet, defined as "using the Internet occasionally" or "sending and receiving e-mail occasionally" ($n = 395$), were used for this analysis.

SOCIODEMOGRAPHIC VARIABLES

Sociodemographic variables used included gender, age, education, income, employment status, and health insurance status. Sociodemographic characteristics of the subpopulation are given in *Table 1*.

HEALTH AND HEALTHCARE PREDICTORS

The Pew survey used several health and health-related variables to assess participant health status, including (1) perceived health status, (2) whether the participant has been living with a chronic condition, (3) whether someone in the participant's family has been living with a chronic condition, (4) whether the participant has faced a medical crisis in the past 12 months, (5) whether someone in the participant's family has face a medical crisis in the past 12 months, and (6) whether the respondent or someone he or she knows had been helped by online health information.

E-HEALTH INFORMATION-SEEKING BEHAVIOR INDEXES

We constructed three separate e-health seeking behavior indexes, termed *Search*, *Socialize*, and *Track*. The *Search* index contained 13 variables that asked participants if they had looked online for information on various medical topics, including diseases, medical treatment, health insurance, pregnancy, and drug safety. All variables had yes/no responses. Respondents were coded as positive for *Search* if they reported any of the 13 activities. The *Socialize* index was coded as yes if participants reported that they were interactive with health information sources. Items included in the *Socialize* index included whether the participants had (1) signed up to receive e-mails about health and medical issues, (2) gone online to find others with similar health concerns, (3) posted health comments in online discussions, blogs, social networks, and Twitter, and (4) used social media sites to get health information, to start a health group, or to follow friends' updates on health. Finally, two variables, "tracked weight and diet" and "tracked other health indicators," were used to create the *Track* index.

DATA ANALYSIS

Simple relationships among demographic variables, health and healthcare variables, and e-health seeking behavior indexes were examined using univariate chi-squared tests. Multivariate logistic regression models were then developed for each e-health behavior using only variables that were statistically significant in the univariate analyses to examine predictors that added significantly to the variances in e-health behaviors among African Americans (i.e., $p \leq 0.05$).[29] All analyses were adjusted for survey weights using SAS SURVEYFREQ and SURVEYLOGISTIC procedures (SAS Institute, Cary, NC).

Results

CHARACTERISTICS OF AFRICAN AMERICAN INTERNET USERS

Table 1 describes the demographic, health, and online characteristics of African American Internet users. Overall, 63% of African Americans ($n = 395$) used the Internet to access the Web or send/receive e-mails. Of those, 80% ($n = 315$) engaged in some e-health behaviors, including searching online for health information (71%), socializing online for health and healthcare (55%), and tracking health activities online (24%).

E-HEALTH BEHAVIOR: SEARCHING ONLINE

Table 2 provides chi-squared values and significance levels for demographic and health predictors of online health information search. Univariately, searching online was significantly associated with income, education, age, gender, having health insurance, having family members or friends living with chronic conditions, having family members or friends with a health crisis in the last 12 months, and having been helped or knowing someone who had been helped by online health information.

Logistic regression analysis was used to further examine these predictors. Only variables that were significant in the univariate analysis (income, education, age, gender, having health insurance, family/friends living with chronic conditions, family/friend health crisis, and have been helped or knows someone who has been helped by online information) were included in the regression model. The regression analysis in *Table 3* showed that controlling for all other characteristics, respondents with higher income, females, and those who had been helped or knew someone who had been helped by online information were more likely to search for health information online. Respondents in the middle-income category ($30,000–74,999) and high-income category ($75,000–150,000+) were, respectively, 3 (odds ratio [OR] = 3.756; 95% confidence interval [CI], 1.482–9.518) and 10 (OR = 9.675; 95%, CI 2.811–33.303) times more likely to search online than respondents in the low-income category (<$10,000–29,999). Males were less likely to search online (OR = 0.322; 95% CI, 0.137–0.753) and those who have been helped or knew someone who had been helped by online information were almost five times more likely to search online (OR = 5.169; 95% CI, 2.051–13.029).

E-HEALTH BEHAVIOR: SOCIALIZING ONLINE

Results from *Table 4* show that interactive health-related activities in African Americans were univariately associated with education, self-perceived good health status, having a family member or friend living with a chronic condition, having a personal health crisis,

Table 1. Characteristics of African American Respondents Who Use the Internet in the Study Sample: 2010 Pew Internet and American Health Survey ($n=395$)

CHARACTERISTIC	UNADJUSTED (*N*)	ADJUSTED [% (*N*)]
Sociodemographic variables		
Gender		
Male	149	49.7 (1,781)
Female	246	50.2 (1,798)
Age (years)		
18–25	70	23 (795)
26–44	135	45 (1,559)
45–64	140	27 (947)
65+	36	5 (171)
Missing	14	3 (106)
Education level		
<High school	32	12 (437)
High school	119	37 (1,305)
Some college	119	27 (958)
College and postgraduate	124	24 (869)
Missing	1	0.3 (10)
Income level		
<$10,000–29,999	139	45 (1,423)
$30,000–74,999	140	36 (1,126)
$75,000–150,000+	72	19 (586)
Missing	44	12 (444)
Married		
No	251	65 (2,337)
Yes	144	35 (1,242)
Employed		
No	159	36 (1,283)
Yes	236	64 (2,296)
Health and healthcare variables		
Perceived health status		
Poor/only fair	70	18 (635)
Good/excellent	325	82 (2,944)
Insurance		
No	66	23 (815)
Yes	329	77 (2,764)
Living with a chronic condition		
No	219	64 (2,302)
Yes	176	36 (1,277)
Family/friend living with a chronic condition		
No	192	52 (1,863)
Yes	203	48 (1,716)
Faced a medical crisis in the past 12 months		
No	343	87 (3,102)
Yes	52	13 (477)
Family/friend faced a medical crisis in the past 12 months		
No	290	76 (2,730)
Yes	105	24 (849)
Internet variables		
Social media user		
No	281	68 (2,428)
Yes	114	32 (1,151)
Search online for health information		
No	103	29 (1,020)
Yes	292	71 (2,559)
Socialize online for health activities		
No	189	48 (1,717)
Yes	206	52 (1,826)
Track health activities online		
No	287	76 (2,722)
Yes	108	24 (857)
Conduct any e-health activities		
No	80	20 (723)
Yes	315	80 (2,856)
Have been helped or know someone who has been helped by online information		
No	275	72 (2,567)
Yes	120	28 (1,012)

having a friend or family member with a health crisis, and having been helped or knowing someone who had been helped by online health information.

All associations except self-perceived good health status retained significance in the multivariate model. Respondents with high school

Table 2. Proportion of African Americans Participating in e-Health Behaviors by Demographic Characteristics

PREDICTOR	SEARCH (*N* = 292)	SOCIALIZE (*N* = 222)	TRACK (*N* = 108)
Education			
< High school[a]	10.4	7.8	7.8
High school	31.5[b]	31.0	19.3[b]
Some college	28.3	27.0	32.0
College and postgraduate	30.0[b]	34.2[b]	41.0[b]
Income			
< $10,000–29,999[a]	34.8	32.9	35.2
$30,000–74,999	41.0	44.2	38.4
$75,000–150,000+	24.2[b]	23.0	26.4
Age (years)			
18–25[a]	21.2	22.0	23.0
26–44	49.7[b]	48.7	54.0
45–64	25.4	26.6	20.4
65+	3.7[b]	2.7	2.6
Married	35.5	33.8	36.5
Male	44.3[b]	44.4	33.4[b]
Employed	64.4	68.2	72.1
Self-perceived good health status	84.5	87.6[b]	82.7
Insured	81.2[b]	82.5	92.8[b]
Living with a chronic condition	35.7	37.4	36.8
Family/friend living with a chronic condition	54.8[b]	59.8[b]	68.0[b]
Faced a medical crisis in the past 12 months	13.3	17.4[b]	20.5
Family/friend faced a medical crisis in the past 12 months	28.3[b]	33.0[b]	36.9[b]
Know someone helped by online health information	36.9[b]	45.4[b]	60.6[b]
Social media user	36.5	37.6	57.0[b]

Data are percentages.

[a]Reference category.

[b]Chi-squared test p value < 0.05, indicating a significant difference.

Table 3. Logistic Regression Model of e-Health Behavior: Searching Online

VARIABLE	B	ODDS RATIO	95% CI
Education[a]			
High school	−0.138	1.536	0.373–6.325
Some college	0.346	2.493	0.526–11.815
College and postgraduate	0.359	2.523	0.412–15.440
Income[b]			
30,000–74,999	0.126	3.756[c]	1.482–9.518
75,000–150,000+	0.625	9.675[c]	2.811–33.303
Age (years)[d]			
26–44	1.126	2.302	0.817–6.486
45–64	−0.173	0.628	0.237–1.659
65+	−1.249	0.215	0.042–1.107
Male	0.567	0.322[c]	0.137–0.753
Insured	−0.136	0.762	0.263–2.205
Family/friend living with a chronic condition	0.269	1.711	0.699–4.188
Family/friend faced a medical crisis in the past 12 months	0.3514	2.019	0.690–5.912
Know someone helped by online health information	0.734	4.336[c]	1.253–5.009

[a]Reference was less than high school.

[b]Reference was < $10,000–29,999.

[c]$p < 0.05$, indicating a significant difference.

[d]Reference was 18–25 years of age.

B, logistic regression coefficient; CI, confidence interval.

education were four times (OR = 4.055; 95% CI, 1.510–10.886) more likely to socialize online than respondents with less than a high school education. Similarly, respondents with some college and college/postgraduate education were, respectively, 3 (OR = 2.747; 95% CI, 1.055–7.154) and 10 (OR = 10.340; 95% CI, 3.626–29.489) times more likely to socialize online. Having a family member living with chronic conditions (OR = 2.074; 95% CI, 1.081–3.980), having a medical crisis (OR = 3.724; 95% CI, 1.324–10.476), having a family member with a medical crisis (OR = 2.398; 95% CI, 1.125–5.112), and being helped/knowing someone helped by online information (OR = 10.768; 95% CI, 4.382–26.460) were associated with increased interactive health-related activities.

E-HEALTH BEHAVIOR: TRACKING ONLINE

Tracking personal health information online was univariately associated with higher education, gender, having health insurance, having a friend or family member with chronic condition, having a health crisis in the past 12 months, having been helped or knowing someone who had been helped by online health information, and being a social media user (*Table 5*). Health insurance (OR = 3.802; 95% CI, 1.542–9.372), social media use (OR = 4.688; 95% CI, 2.361–9.308), and having been helped or knowing someone who had been

Table 4. Logistic Regression Model of e-Health Behavior: Socializing Online

VARIABLE	B	ODDS RATIO	95% CI
Education[a]			
High school	0.213	4.055[b]	1.510–10.886
Some college	−0.176	2.747[b]	1.055–7.154
College and postgraduate	1.149	10.340[b]	3.626–9.489
Self-perceived good health status	0.375	2.115	0.858–5.213
Family/friend living with a chronic condition	0.365	2.074[b]	1.081–3.980
Faced a medical crisis in the past 12 months	0.657	3.724[b]	1.324–10.476
Family/friend faced a medical crisis in the past 12 months	0.437	2.398[b]	1.125–5.112
Know someone helped by online health information	1.188	10.768[b]	4.382–26.460

[a]Reference was less than high school.

[b]$p < 0.05$, indicating a significant difference.

B, logistic regression coefficient; CI, confidence interval.

helped by online information (OR = 5.191; 95% CI, 2.326–11.587) remained significant in multivariate models.

Discussion

Much of the previous research in e-health use has examined differences by general demographics such as age, education, and employment.[9] This study deepens that research to explore health and healthcare variables that may prompt African Americans, a population traditionally underserved by e-health solutions, to engage in various e-health activities. We chose to limit our analyses to African Americans who already use the Internet, at least occasionally, in order to focus specifically on predictors of e-health use rather than Internet use in general, which has already been studied in great detail. Understanding predictors of e-health use in this population is of particular importance in the light of findings by Rooks et al.[3] showing that African Americans have significantly greater odds of using health information to change their overall approach to maintaining their health compared with whites (OR = 1.912) and reporting that the health information helped them to better understand how to treat an illness or condition (OR = 1.79).

Table 5. Logistic Regression Model of e-Health Behavior: Tracking Online

VARIABLE	B	ODDS RATIO	95% CI
Education[a]			
High school	−0.381	1.007	0.213–4.560
Some college	0.119	1.659	0.377–7.296
College and postgraduate	0.650	2.821	0.581–13.687
Male	−0.279	0.572	0.271–1.208
Insured	0.668	3.802[b]	1.542–9.372
Family/friend living with a chronic condition	0.099	1.218	0.539–2.753
Family/friend faced a medical crisis in the past 12 months	0.166	1.393	0.562–3.456
Know someone helped by online health information	0.824	5.191[b]	2.326–11.587
Social media user	0.773	4.688[a]	2.361–9.308

[a]Reference was less than high school.

[b]$p < 0.05$, indicating a significant difference.

B, logistic regression coefficient; CI, confidence interval.

Our analyses show that among African Americans who already use the Internet, there are significant differences in e-health information-seeking behaviors. Although socioeconomic factors still play a role, these differences are based more on their personal and family health concerns and experiences. A consistent significant predictor of e-health activities for African Americans was having positive personal e-health experiences or knowing of friends or family members with positive experiences. Those who had been previously helped or knew someone who had been helped by online health information were more than five times more likely to search or track symptoms online and more than eight times more likely to conduct interactive health-related activities online. This is consistent with previous findings suggesting that word of mouth is an important source of healthcare information among minorities.[30] This finding further suggests that online health resources can expand their audiences through social network-based marketing campaigns.

Interactive or social interactions with online health information were highly associated with personal and family health status. Individuals who had faced a medical crisis, had a family/friend face a medical crisis, or had a friend/family member living with a chronic condition had over twice the odds of conducting health-related socializing online (i.e., receiving e-mails about health, posting health comments on discussion boards and blogs, and using social media as a source of information). Previous studies have found high Internet usage levels by those experiencing sickness or disability.[9] African Americans may be even more likely to use health information to treat illnesses instead of seeking care in the traditional healthcare system, because of disparities in health insurance,[29] access to care,[31] and perceived discrimination attributed to cultural and communication barriers.[32–34] Our results confirm this view and further suggest that African Americans who have personal experience or have family members with sickness or disability are not just passively searching for health information online but are proactively lending their voices and opinions to online discussions about health and health information.

Having health insurance was only associated with our *Tracking* index. This may, in part, be the result of health insurance companies offering disease management tools and personal health records for such activities. Tracking health information can be a useful tool in talking to a doctor or providing information to insurance companies.[35]

As employers increasingly incentivize or require participation in health risk reduction programs, this relationship may continue to grow. The actual impact of such systems on health outcomes and costs, however, requires further study. It is interesting that although our univariate analysis was consistent with other studies[9,36,37] in suggesting that women are more likely to seek health information online and conduct more interactive health activities than men, this gender effect was only significant in our search for health information online multivariate model. This aligns with previous research that found women to have a higher tendency to conduct e-health activities due to their role as the primary caregiver.[7] Inclusion of personal and family chronic illness and health crisis as covariates likely reduced the explanatory power of gender on its own. Our research further confirmed significance of a few sociodemographic variables such as income and education[3,6,38] as predictors of some online health activities. Higher income levels and higher education were significantly associated with increased odds of searching for health information online and socializing online, respectively.

Some limitations to the generalizability of these results are created by the survey design. The telephone survey required people 18 years of age and over who have a private landline or cell phone line. As a consequence, it is likely that those most vulnerable to exclusion from an "e-society" have been excluded from the survey, including immigrants, refugees, and the homeless. Additionally, the cross-sectional nature of the data makes it impossible to identify causality. Our findings can only be considered associations. For example, it is possible that knowing someone with a positive online experience increased the probability of e-health use, but it is also possible that e-health use increases the probability of knowing someone with a positive e-health experience.

Conclusions and Recommendations for Future Research

This analysis has added to the literature by providing in-depth information on why and how African Americans are using the Internet for online health information. It is clear from the findings that the majority of African Americans Internet users are attempting to find avenues to improve their healthcare and health knowledge online. This use can vary from simply seeking information on a specific diagnosis to treatment to daily tracking of symptoms and medications and is largely driven by personal and family health needs and by the perception that online health information can have value. Although the digital divide certainly limits the access of some African Americans to online e-health resources, it does not rule out e-health interventions as tools to educate and empower a significant subset of the population.

It is important to note that, although promotion of e-health activities may have positive implications in minority communities, there is no uniform reliability and quality of health Web sites.[8] Finding high-quality sites can be difficult, and health information Web sites may have problems with completeness and accuracy of information.[39] Additionally, users may not have sufficient health literacy to effectively evaluate or use the information they find.[40] Most worrying is that using health information from the Internet for decision-making without guidance from experts can potentially have an adverse effect on patient health.[41] Therefore, creating well-prepared Internet users is imperative, and culturally informed interventions may have particular value in the African American population, who use e-health resources but still retain significant concerns regarding cultural adequacy, visual style, and trustworthiness of online information.[42–44]

Disclosure Statement

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