

# Health care consumer's use and trust of health information sources

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## Abstract

Although most individuals continue to use and trust their health care professional for health information, they are increasingly bombarded with health information from other sources such as the Internet, television, and family or friends. It is important to understand where variances in the use and trust of health information by various demographic factors occur, in order to monitor these sources to make sure that information provided is accurate and understandable. Therefore, the purpose of this study was to use data from the Annenberg National Health Communication Survey (ANHCS) to determine the relationship of demographic variables of age, race/ethnicity, educational level, gender, income level, and health status to use and trust of health information sources (health provider, television, Internet, and family or friends). Data were also analyzed to determine how these demographic variables increase or decrease the likelihood of using the various sources for health information. Results from the analysis showed that significant differences occur in use of health information when examined by demographic variables. Suggestions were made on how to make these health information sources more user-friendly and caution was expressed regarding the accuracy of sources.

**Keywords:** Health communication, Health literacy, Health disparities

Individuals receive a wide range of health information through various forms of communication.<sup>1</sup> Health care consumers are bombarded with hundreds of messages everyday from the media, health professionals, and their friends and family, coworkers. Therefore, individuals must be selective about which messages receive their attention.<sup>2,3</sup> Concern with how individuals obtain and use health information is increasing as health care policies push for citizens to take greater responsibility for their own health.<sup>4-7</sup>

## Sources of health information

Historically, the most used and trusted source of health information for consumers has been the patient's physician. However, individuals are seeking health information from other sources as well. A recent Pew report found that when seeking health information or assistance dealing with health or medical issues, 86% of adults ask a health professional, 68% ask a friend or family member, 57% use the Internet, 54% use books or other printed reference material, 33% contact their insurance provider, and 5% use another source.<sup>8</sup> However, when the National Cancer Institute asked respondents where they went first for cancer treatment, the Internet was their top choice. In fact, even as trust in physicians remained steady and trust in the Internet decreased, the use of the Internet as a first stop for respondents seeking information rose over time.<sup>9</sup>

Hesse *et al.*<sup>10</sup> examined data from the *Health Information National Trends Survey* ( $n = 6369$ ) to provide a nationally representative estimate for health-related uses of the Internet, level of trust in health information sources, and preferences for cancer information sources. Results showed that 63% of the US adult population in 2003 reported ever going online, with 63.7% of the online population having looked for information for themselves or others at least once in the past 12 months. However, physicians remained the most highly trusted information source to patients (62.4%). When asked where they preferred going for specific health information, 49.5% reported wanting to go to their physician first; however, when asked where they actually went, 48.6% reported going online first, with only 10.9% going to their physician first.

Choice of where to find health information varies by certain demographics. For example, adults between the ages of 18 and 29 are significantly less likely than older adults to consult a health

professional.<sup>8</sup> Younger adults are also more likely than older adults to consult a friend or family member. This survey also found differences in choice of where to seek health information varied by education level with 94% of college graduates consulting a health professional, compared to 83% of high school graduates. Seventy-five percent of college graduates consult friends and family members, compared with 66% of high school graduates.

Use of the Internet as a source of health information continues to increase. In 2009, 61% of adults looked online for health information.<sup>8</sup> This same report found of those persons surveyed, 66% reported that they looked online for general information; 55% for information about a specific disease or medical problem; 52% for information about exercise or fitness; 45% for information about prescription or over-the-counter drugs; 47% for information about doctors or other health care professionals; 37% for information related to health insurance; 38% for information about alternative treatments or medicines; 28% for information about depression, anxiety, stress, or other mental health issues; 33% for information on how to control or lose weight; 20% for information about experimental treatments; and 12% for information about how to stay healthy on a trip overseas.

Use of the Internet has made an impact. For example, 60% of persons surveyed say the information found online affected a decision about how to treat an illness or condition; half say it changed the way they cope with a chronic condition or manage pain; 56% say it changed their overall approach to maintaining their health or the health of someone they help take care of; 53% say it lead them to ask a doctor new questions, or to get a second opinion from another doctor; 49% say it changed the way they think about diet, exercise, or stress management; 38% say it affected a decision about whether to see a doctor; and 38% say it changed the way they cope with a chronic condition or manage pain.<sup>8</sup>

#### *Trust in health information sources*

When seeking health information, trust in the source of that information is important. A study compared trust in one's personal physician, health insurer, and in the medical profession and examined whether the relationship between trust and satisfaction differs according to the type of trust in question.<sup>11</sup> Results found that both physician and insurer trust are sensitive to the amount of contact the patient has had and their adequacy of choice in selecting the physician or insurer. Trust in the medical profession

was related to patients' desire to seek care and their preference for how much control physicians should have in making medical decisions.

Trust in information sources can also vary by certain demographics. Do *et al.*<sup>12</sup> studied the effects of health care access and other characteristics on physician trust among black and white prostate cancer patients ( $n = 474$ ) and found that black patients who delayed seeking care had physician trust levels that were far lower than that of both Caucasians as well as that of black patients overall. Black patients also had a greater variability in their levels of physician trust compared to their white counterparts.

Kao *et al.*<sup>13</sup> studied 292 patients and found that those who reported having enough choice of physician ( $P < 0.05$ ), who reported longer relationship with their physician ( $P < 0.001$ ), and who trusted their managed care organization ( $P < 0.001$ ) were more likely to trust their physician. Contrary to the results of the Doe *et al.*<sup>13</sup> study, patient age, gender, race, education, income, self-perceived health status, belief in the benevolence of people, length of health plan enrollment, and number of primary care office visits were not significantly correlated with patient trust. These studies show that various sources of health information are used by individuals, although face-to-face communication with health care providers, primarily physicians, remains the most sought after source of health information. However, use of the Internet, family and friends, and television (TV) remain frequently used sources of information, especially during a time when physicians have less time with patients and patients are being asked to manage more and more of their own health issues. As noted, demographic differences may affect where health information is sought and trusted with regard to health issues. Therefore, the purpose of this study was to examine differences in the use and trust of the most frequently cited sources of health information by various demographic populations and how demographic factors affect the likelihood of use of and trust in various health information sources using data gathered from the *Annenberg National Health Communication Survey*.<sup>14</sup> It is hoped that results from this study will provide information to assist health professionals on the sources most likely to be used and trusted by the clients they serve. The research questions for this study are: (1) Is there a significant difference in use of various sources of health information by age, level of education, gender, marital status, race/ethnicity, income, trust, frequency of physician consultation, and health status? (2) How do various

demographics affect the likelihood of obtaining health information from health sources?

## Methods

### *Instrument*

In order to examine the relationship of various demographic factors and sources of information sought and trusted, data were analyzed from the 2008 *Annenberg National Health Communication Survey* (ANHCS).<sup>14</sup> This survey is co-sponsored by the Annenberg School for Communication at the University of Pennsylvania and the Annenberg School for Communication at the University of Southern California. The survey is designed to capture national trends relating health behavior and behavioral intentions to media exposure, health knowledge and beliefs, and policy preferences and beliefs. Since its inception in January 2005, ANHCS has collected data monthly from a nationally representative sample of adults in the United States.

The sample for the 2008 ANHCS was recruited through a two-step process. Participants were recruited for a panel from a list-assisted, random digit dial population of all landline telephone numbers in the United States. The survey was administered to a sample from the panel using probability proportional to size sampling where the panel sample design weights were used as the measure of size. Final respondent data required additional adjustments to account for variable non-response and non-coverage. Current Population Survey data for the adult US population served as benchmarks for these characteristics, which included age, gender, race, Hispanic ethnicity, census region, metropolitan status, and education. To date, ANHCS data have been presented at scholarly conferences both in the US and internationally. The final sample size for the ANHCS for 2008 was 3656.<sup>14</sup>

### *Description of variables*

Dependent variables included source and trust in sources of health information. In order to determine source of health information, responses were analyzed from the survey question, 'Thinking about all of the different ways of communicating and getting information what are the most important ways that you get medical and health information for yourself or for your family? (TV, newspapers, books, magazines, Internet, radio, movies, friends or family, people at work, doctors or other traditional health providers, non-traditional/alternative health care providers, health organizations,

religious organizations, other) [yes, no]?' In order to determine trust in sources of health information, responses were analyzed from the survey question, 'How much do you trust the information about health from each of the following (TV, newspapers, general magazines, specific health or medical magazines or newsletters, the Internet, family and friends, your doctor or other health care professional) [a lot, some, a little, not at all]?' Answers were compressed to 'some to a lot' and 'a little to not at all?' Sources of information used for the final analysis (health professional, Internet, family or friends, and TV) were determined by their presence in both questions and frequency of mention in literature.

Independent variables included demographics identified in the literature including age (18-29, 30-44, 45-59, 60+), education (less than high school, high school graduate/GED, some college, bachelor's degree or higher), gender, race/ethnicity (white non-Hispanic, black non-Hispanic, Hispanic, other non-Hispanic), marital status (coupled, uncoupled), income (\$0-24 999, \$25 000-49 999, \$50 000-74 999, \$75 000+), times consulted a physician in the past year (never, less than one time per month, at least one time per month), and health status (good to excellent, fair to poor).

### *Sample*

Of the 3656 participants (data not shown), 16.5% were age 18-29, 27.6% were 30-44, 30.5% were 45-59, and 25.3% were 60 years of age and older. Analysis of level of education showed 12.9% with less than a high school degree, 30.7% with a high school degree, 28.0% with some college, and 28.4% with a bachelor's degree or higher. There was a slight majority of females over males (52 vs. 48%) and the majority of respondents were White, non-Hispanic (75.6%). More participants were coupled (60.8%) and in good to excellent health (70.3%). Household income ranged from 23.8% earning \$0-24 999, 30.3% earning \$25 000-49 999, 21.5% earning \$50 000-74 999, and 24.4% earning \$75 000 and more.

### *Analysis*

A chi-square analysis was performed in order to examine differences in the use and trust of various sources of health information by various demographic populations. To examine the relationships more fully, a series of logistic regression analyses were conducted examining what variables increase or decrease the likelihood of a person using various types of health information. The coefficients for this model are expressed as odds ratios (OR); 95%

confidence intervals (CIs) are reported to indicate the precision of these estimates. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) v. 17. This study was approved by the institutional review board.

## Results

### *Comparison of health communication by demographic factors*

#### **Age**

Significant differences were found regarding source of health information by age (Table 1). Persons who are older are more likely than younger adults to get medical information from TV and their health care provider, whereas those who are younger are more likely than older adults to get health information from the Internet and family or friends. There are also significant differences by age in how much trust adults have in the information provided by these sources. Adults 45–59 years of age are more likely than other age groups to trust TV for health information, whereas those 30–44 are more likely than other age groups to trust the Internet. Younger adults, age 18–29, are more likely than other age groups to trust health information from family and friends and those over 60 years of age are more likely than other age groups

to trust health information given by a health care provider.

#### **Race/ethnicity**

There are also significant differences regarding source of health information for different race/ethnicities (Table 2). Blacks are more likely than other race/ethnicities to get medical information from TV; whereas other/non-Hispanic persons are more likely than other race/ethnicities to obtain information from the Internet. Hispanic persons are more likely than other race/ethnicities to get health information from family and friends and Whites are more likely than other race/ethnicities to obtain health information from health care providers. Blacks are also more likely than other race/ethnicities to trust health information from TV; whereas Whites are more likely than other race/ethnicities to trust health information from health care providers. There was no significant difference by race/ethnicity in trust for health information from the Internet or family and friends.

#### **Gender**

Significant differences were found by gender regarding obtaining health information from the Internet and from health care providers with

Table 1: Source of health information by age.

Variable	18–29	30–44	45–59	60+
Get medical information from TV***				
Yes	17.9% (402)	16.8% (634)	23.7% (987)	26.1% (907)
No	82.1% (1849)	83.2% (3131)	76.3% (3179)	73.9% (2563)
Get medical information from Internet***				
Yes	42.0% (945)	44.4% (1673)	35.9% (1496)	20.9% (724)
No	58.0% (1306)	55.6% (2092)	64.1% (2670)	79.1% (2746)
Get medical information from family/friends***				
Yes	42.7% (962)	32.8% (1235)	26.7% (1112)	23.7% (822)
No	57.3% (1289)	67.2% (2530)	73.3% (3054)	76.3% (2648)
Get medical information from health care provider***				
Yes	61.0% (1374)	67.0% (2522)	69.5% (2894)	76.5% (2653)
No	39.0% (877)	33.0% (1243)	30.5% (1272)	23.5% (817)
Trust TV for medical information***				
Some to a lot	55.4% (1264)	61.7% (2366)	64.9% (2752)	61.6% (2158)
A little to not at all	44.6% (1018)	38.3% (1466)	35.1% (1489)	38.4% (1345)
Trust Internet for medical information***				
Some to a lot	66.1% (1510)	72.0% (2755)	69.6% (2939)	55.8% (1935)
A little to not at all	33.9% (773)	28.0% (1069)	30.4% (1286)	44.2% (1530)
Trust family/friend for medical information***				
Some to a lot	78.8% (1801)	76.3% (2926)	73.3% (3111)	71.0% (2492)
A little to not at all	21.2% (485)	23.7% (908)	26.7% (1132)	29.0% (1019)
Trust health care provider for medical information***				
Some to a lot	93.7% (2143)	95.3% (3656)	95.9% (4074)	96.9% (3409)
A little to not at all	6.3% (143)	4.7% (180)	4.1% (172)	3.1% (108)

\*\*\* $P < 0.001$ .

Table 2: Source of health information by race/ethnicity.

Variable	White non-Hispanic	Black non-Hispanic	Hispanic	Other non-Hispanic
Get medical information from TV***				
Yes	20.4% (2112)	30.0% (391)	24.0% (255)	17.9% (172)
No	79.6% (8218)	70.0% (911)	76.0% (806)	82.1% (787)
Get medical information from Internet***				
Yes	36.4% (3765)	26.4% (344)	32.3% (343)	40.3% (386)
No	63.6% (6565)	73.6% (958)	67.7% (718)	59.7% (573)
Get medical information from family/friends*				
Yes	30.1% (3107)	28.3% (368)	33.6% (356)	31.3% (300)
No	69.9% (7223)	71.7% (934)	66.4% (705)	68.7% (659)
Get medical information from health care provider***				
Yes	70.6% (7296)	66.4% (864)	61.3% (650)	66.0% (633)
No	29.4% (3034)	33.6% (438)	38.7% (411)	34.0% (326)
Trust TV for medical information***				
Some to a lot	60.2% (6313)	72.1% (956)	65.2% (700)	59.0% (571)
A little to not at all	39.8% (4178)	27.9% (370)	34.8% (373)	41.0% (397)
Trust Internet for medical information				
Some to a lot	66.5% (6949)	66.0% (870)	63.4% (679)	66.4% (641)
A little to not at all	33.5% (3493)	34.0% (449)	36.6% (392)	33.6% (324)
Trust family/friend for medical information				
Some to a lot	74.9% (7862)	73.1% (968)	71.9% (772)	74.7% (728)
A little to not at all	25.1% (2639)	26.9% (357)	28.1% (301)	25.3% (247)
Trust health care professional for medical information***				
Some to a lot	96.2% (10102)	95.1% (1263)	93.3% (1006)	93.3% (911)
A little to not at all	3.8% (401)	4.9% (65)	6.7% (72)	6.7% (65)

\* $P < 0.05$ , \*\*\* $P < 0.001$ .

females more likely than men to use both sources (Table 3). Females were also significantly more likely to trust health information from all sources.

Table 3: Source of health information by gender.

Variable	Male	Female
Get medical information from TV		
Yes	22.1% (1446)	20.9% (1484)
No	77.9% (5091)	79.1% (5631)
Get medical information from Internet*		
Yes	34.5% (2256)	36.3% (2582)
No	65.5% (4281)	63.7% (4533)
Get medical information from family/friends		
Yes	30.6% (2003)	29.9% (2128)
No	69.4% (4534)	70.1% (4987)
Get medical information from health care provider***		
Yes	67.4% (4409)	70.8% (5034)
No	32.6% (2128)	29.2% (2081)
Trust TV for medical information***		
Some to a lot	57.8% (3845)	65.1% (4695)
A little to not at all	42.2% (2806)	34.9% (2512)
Trust Internet for medical information***		
Some to a lot	62.1% (4118)	70.0% (5021)
A little to not at all	37.9% (2510)	30.0% (2148)
Trust family/friend for medical information***		
Some to a lot	71.4% (4753)	77.3% (5577)
A little to not at all	28.6% (1905)	22.7% (1639)
Trust health care professional for medical information**		
Some to a lot	95.0% (6336)	96.2% (6946)
A little to not at all	5.0% (331)	3.8% (272)

\* $P < 0.05$ , \*\*\* $P < 0.001$ .

### Level of education

Significant differences were found by educational level in source of health information (Table 4). Persons with less than a high school degree were more likely than those with more education to obtain information from TV or family and friends; whereas those with a bachelor's degree or higher were more likely than individuals with less education to get information from the Internet. There were less significant differences in obtaining health information from a health care provider when examined by educational level. Persons with a high school education were slightly more likely than those with other educational levels to trust TV for health information; whereas those with a bachelor's degree or higher were more likely than persons with less education to trust the Internet or their health care provider for health information. No significant difference was found for trusting health information from family and friends by educational level.

### Household income

Results showed significant differences by income level in source of health information with those earning \$0–24 999 more likely than other income groups to get health information from TV and family and friends; and those earning \$75 000 and more likely than other income groups to obtain

Table 4: Source of health information by educational level.

Variable	Less than high school	High school/ GED	Some college	Bachelor's degree or higher
Get medical information from TV***				
Yes	29.6% (519)	24.4% (1016)	21.2% (811)	15.0% (584)
No	70.4% (1236)	75.6% (3151)	78.8% (3020)	85.0% (3315)
Get medical information from Internet***				
Yes	19.7% (346)	25.7% (1070)	39.8% (1526)	48.6% (1896)
No	80.3% (1409)	74.3% (3097)	60.2% (2305)	51.4% (2003)
Get medical information from family/friends***				
Yes	37.5% (659)	32.3% (1345)	30.4% (1165)	24.7% (962)
No	62.5% (1096)	67.7% (2822)	69.6% (2666)	75.3% (2937)
Get medical information from health care provider*				
Yes	66.7% (1170)	70.8% (2949)	68.4% (2622)	69.3% (2702)
No	33.3% (585)	29.2% (1218)	31.6% (1209)	30.7% (1197)
Trust TV for medical information*				
Some to a lot	59.5% (1062)	63.2% (2691)	61.5% (2384)	61.0% (2403)
A little to not at all	40.5% (722)	36.8% (1565)	38.5% (1495)	39.0% (1536)
Trust Internet for medical information***				
Some to a lot	54.5% (965)	60.9% (2569)	68.3% (2645)	75.2% (2960)
A little to not at all	45.5% (806)	39.1% (1651)	31.7% (1226)	24.8% (975)
Trust family/friend for medical information				
Some to a lot	75.8% (1359)	75.3% (3200)	73.4% (2849)	74.0% (2922)
A little to not at all	24.2% (433)	24.7% (1051)	26.6% (1035)	26.0% (1025)
Trust health care professional for medical information***				
Some to a lot	92.2% (1651)	95.5% (4067)	95.7% (3719)	97.3% (3845)
A little to not at all	7.8% (140)	4.5% (191)	4.3% (166)	2.7% (106)

\* $P < 0.05$ , \*\*\* $P < 0.001$ .

health information from the Internet and their health care provider (Table 5). Significant differences were also found in level of trust for health

care information with those earning \$75 000 and up more likely than other income groups to trust the Internet and health care providers.

Table 5: Source of health information by household income.

Variable	\$0–24 999	\$25 000–49 999	\$50 000–74 999	\$75 000+
Get medical information from TV***				
Yes	26.1% (849)	24.0% (993)	19.7% (578)	15.3% (510)
No	73.9% (2398)	76.0% (3138)	80.3% (2362)	84.7% (2824)
Get medical information from Internet***				
Yes	25.2% (817)	31.5% (1300)	37.1% (1091)	48.9% (1630)
No	74.8% (2430)	68.5% (2831)	62.9% (1849)	51.1% (1704)
Get medical information from family/friends*				
Yes	31.8% (1034)	30.2% (1246)	31.0% (910)	28.2% (941)
No	68.2% (2213)	69.8% (2885)	69.0% (2030)	71.8% (2393)
Get medical information from health care provider***				
Yes	66.9% (2172)	68.2% (2819)	70.2% (2063)	71.7% (2389)
No	28.3% (945)	31.8% (1312)	29.8% (877)	28.3% (945)
Trust TV for medical information				
Some to a lot	62.3% (2055)	61.4% (2581)	62.1% (1853)	60.7% (2051)
A little to not at all	37.7% (1241)	38.6% (1621)	37.9% (1130)	39.3% (1326)
Trust Internet for medical information***				
Some to a lot	60.5% (1985)	62.8% (2620)	67.7% (2010)	74.8% (2524)
A little to not at all	39.5% (1294)	37.2% (1555)	32.3% (959)	25.2% (850)
Trust family/friend for medical information				
Some to a lot	74.4% (2458)	74.4% (3128)	74.1% (2211)	74.9% (2533)
A little to not at all	25.6% (846)	25.6% (1075)	25.9% (774)	25.1% (849)
Trust health care professional for medical information***				
Some to a lot	93.4% (3091)	95.6% (4024)	96.6% (2883)	97.1% (3284)
A little to not at all	6.6% (218)	4.4% (187)	3.4% (100)	2.9% (98)

\* $P < 0.05$ , \*\*\* $P < 0.001$ .

## Health status

Significant differences exist by health status in source of health information with those with fair to poor health more likely than those with good to excellent health to obtain health information from TV and their health care provider; whereas those with good to excellent health are more likely than those with fair to poor health to get information from the Internet (Table 6). Those who have good to excellent health are significantly more likely than those with fair to poor health to trust information from the Internet and their health care provider. No significant difference was found in trust level for health information obtained through TV or family and friends by health status.

### Likelihood of getting health information by source

#### Health professional

Results from the logistic regression analysis (Table 7) show that older adults, especially those over 60 years of age are 1.47 times as likely to get health information from a health professional. Those who trust their health professional ‘some to a lot’ for

Table 6: Source of health information by health status.

Variable	Good to excellent	Fair to poor
Get medical information from TV***		
Yes	20.4% (2205)	25.4% (721)
No	79.6% (8587)	74.6% (2117)
Get medical information from Internet***		
Yes	36.7% (3966)	30.3% (861)
No	63.3% (6826)	69.7% (1977)
Get medical information from family/friends		
Yes	30.3% (3266)	30.3% (860)
No	69.7% (7526)	69.7% (1978)
Get medical information from health care provider***		
Yes	68.3% (7376)	72.5% (2058)
No	31.7% (3416)	27.5% (780)
Trust TV for medical information		
Some to a lot	61.4% (6736)	62.6% (1794)
A little to not at all	38.6% (4233)	37.4% (1074)
Trust Internet for medical information***		
Some to a lot	67.4% (7361)	61.8% (1760)
A little to not at all	32.6% (3566)	38.2% (1089)
Trust family/friend for medical information		
Some to a lot	74.8% (8210)	73.2% (2102)
A little to not at all	25.2% (2772)	26.8% (769)
Trust health care professional for medical information**		
Some to a lot	95.9% (10541)	94.7% (2722)
A little to not at all	4.1% (448)	5.3% (153)

\*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

health information are 7.78 times as likely to get health information from a health professional as those who only trusted their health professional for health information ‘a little to not at all.’ Those persons who had seen a physician at least one time per month in the last 12 months were 3.78 times as likely to get health information from a health professional. Level of education, gender, race/ethnicity, income, and health status do not substantially affect the likelihood of getting health information from a health professional.

#### Internet

Alternatively, older adults, especially 60 years or older, are approximately one-third as likely (0.35) to get health information from the Internet as those 18–29. Those with a bachelor’s degree or higher are 2.49 times as likely to get health information from the Internet as those with less than a high school education and those with household incomes of \$75 000 and up are 1.65 times more likely to get health information from the Internet than those earning less than \$25 000. Persons who are Black or Hispanic are also less likely than Whites to use the Internet to get health information (0.65 and 0.77, respectively). Those who trust the Internet for health information ‘some to a lot’ are 8.28 times more likely to get information from the Internet than those who only trust this information ‘a little to not at all’ and those who trust family and friends or TV for health information are less likely to use the Internet to get health information (0.61 and 0.67, respectively). Gender, marital status, trust in health professionals for health information, number of times a physician was consulted in the past year, and health status do not substantially affect the likelihood of getting health information from the Internet.

#### Family or friends

Older adults, especially those over 60 years of age are significantly less likely (0.45) to get health information from family or friends than those who are 18–29 years of age. Individuals with a bachelor’s degree or higher are also less likely (0.57) to get health information from family or friends than those who have less than a high school degree. Those who trust family and friends for information ‘some to a lot’ are 5.87 times more likely to get health information from family or friends than those who trust family and friends ‘a little to not at all’ and those who trust the Internet or TV for health information are less likely to get health information from family or friends (0.56 and 0.73, respectively). Gender, marital status, race, income,

Table 7: Likelihood of using health information by source.

Variable	Health professional		Internet		Family or friends		TV	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age								
18–29 (ref)	1.00		1.00		1.00		1.00	
30–44	1.14	1.0–1.3	0.81	0.7–0.9	0.75	0.7–0.9	1.06	0.9–1.2
45–59	1.20	1.1–1.4	0.55	0.5–0.6	0.59	0.5–0.7	1.52	1.3–1.8
60+	1.47	1.3–1.7	0.35	0.3–0.4	0.45	0.4–0.5	1.77	1.5–2.1
Education								
Less than high school (ref)	1.00		1.00		1.00		1.00	
High school grad/GED	1.06	0.9–1.2	1.32	1.1–1.6	0.85	0.7–1.0	0.81	0.7–0.9
Some college	0.97	0.8–1.1	2.11	1. –2.5	0.74	0.6–0.9	0.73	0.6–0.9
Bachelor’s degree or higher	0.93	0.8–1.1	2.49	2.1–2.9	0.57	0.5–0.7	0.55	0.5–0.7
Gender								
Male	1.00		1.00		1.00		1.00	
Female	1.11	1.0–1.2	1.01	0.9–1.1	0.93	0.8–1.0	0.90	0.8–1.0
Marital status								
Coupled	1.00		1.00		1.00		1.00	
Uncoupled	0.76	0.7–0.8	0.93	0.8–1.0	1.08	1.0–1.2	1.13	1.0–1.3
Race/ethnicity								
White, non-Hispanic	1.00		1.00		1.00		1.00	
Black, non-Hispanic	0.89	0.8–1.0	0.65	0.6–0.8	0.88	0.8–1.0	1.43	1.2–1.7
Hispanic	0.82	0.7–1.0	0.77	0.6–0.9	1.01	0.9–1.2	1.19	1.0–1.4
Other, non-Hispanic	0.92	0.8–1.1	1.03	0.9–1.2	0.98	0.8–1.2	0.98	0.8–1.2
Income								
\$0–24 999	1.00		1.00		1.00		1.00	
\$25 000–49 999	0.97	0.9–1.1	1.17	1.0–1.3	1.00	0.9–1.1	1.00	0.9–1.1
\$50 000–74 999	1.06	0.9–1.2	1.27	1.1–1.5	1.09	0.9–1.2	0.88	0.8–1.0
\$75 000+	1.13	1.0–1.3	1.65	1.4–1.0	1.05	0.9–1.2	0.78	0.7–0.9
Trust health professional for health information								
A little to not at all	1.00		1.00		1.00		1.00	
Some to a lot	7.78	6.2–9.8	0.90	0.7–1.1	5.87	5.1–6.7	0.81	0.7–0.9
Trust Internet								
A little to not at all	1.00		1.00		1.00		1.00	
Some to a lot	0.84	0.8–0.9	8.28	7.3–9.4	0.93	0.7–1.2	0.65	0.5–0.8
Trust family or friend								
A little to not at all	1.00		1.00		1.00		1.00	
Some to a lot	0.93	0.8–1.0	0.61	0.5–0.7	0.56	0.5–0.6	0.70	0.6–0.8
Trust TV								
A little to not at all	1.00		1.00		1.00		1.00	
Some to a lot	0.76	0.7–0.8	0.67	0.6–0.7	0.73	0.7–0.8	3.94	3.5–4.4
Times in the last 12 months consulted MD								
Never	1.00		1.00		1.00		1.00	
Less than 1 × /month	2.34	2.1–2.6	0.98	0.9–1.1	0.86	0.8–1.0	0.77	0.7–0.9
At least 1 × /month	3.78	3.2–4.5	0.96	0.8–1.1	0.84	0.7–1.0	0.67	0.6–0.8
Health status								
Good to excellent	1.00		1.00		1.00		1.00	
Fair to poor	1.12	1.0–1.3	1.06	0.9–1.2	1.00	0.9–1.1	1.15	1.0–1.3

trust in health professional for health information, number of times a physician was consulted in the past year, and health status do not substantially affect the likelihood of getting health information from family or friends.

### Television

Older adults, especially 60 years of age and older, are 1.77 times more likely to get health information from TV than those aged 18–29. Individuals with a

bachelor’s degree or higher are approximately half as likely (0.55) to get health information from TV than those who have less than a high school education. Blacks are 1.43 times more likely to get health information from TV than Whites. Persons who have a household income of \$75 000 and above are less likely (0.78) to get health information from TV than those who have a household income of less than \$25 000. Those who trust TV for health information ‘some to a lot’ are 3.94 times more

likely to get health information from TV than those who only trust this information 'a little to not at all.' Persons who trust family or friends, health professionals, or the Internet 'some to a lot' for health information are less likely (0.81, 0.65, and 0.70, respectively) to get health information from TV. Individuals who have consulted with a physician less than once per month or at least once per month during the past year are less likely (0.77 and 0.67, respectively) to get information from TV than those who did not consult a physician during the past year. Gender, marital status, and health status do not substantially affect the likelihood of getting health information from TV.

## Discussion

Findings from this study did show that a significant difference exists in source of health information by various demographics. This study found that older adults, Whites, those with more education and higher incomes are more likely than other populations to use and trust their health professional for information. Younger adults, those with more education and income were more likely to use and trust the Internet for health information than other populations. Younger adults, Hispanics, and those with less education and income were more likely to use and trust family and friends for health information than other populations. Finally, older adults, Blacks, and those with less education and income were more likely than other populations to use and trust TV for health information. These results are consistent with the 2009 Pew report with regard to younger adults being less likely to consult a health professional and more likely to consult a family or friend to obtain health information.<sup>8</sup> Also consistent with the Pew report are the results from this study showing that those with more education are more likely to consult a health professional than those with less education. However, inconsistent with the Pew report, this study found that those with less education are more likely to consult with family or friends than those with more education.

### Implications

Although findings from this research show that health professionals remain the source of choice for health information by all demographics, there are significant variations in use and trust of health information from other sources. The increase in use of other sources for health information besides health professionals has implications that involve the accuracy and understanding of information

provided to those who retrieve the information. For example, studies assessing information in traditional media frequently report high prevalences of inaccurate or incomplete information. In an early study, authors found that 70% of health information broadcast on TV to be inaccurate, misleading, or both.<sup>15</sup> In another study, authors rated as inaccurate 76% of the information about oral hygiene from TV, 53% from magazines, and 12% from newspapers.<sup>16</sup> A study of the popular press found 20% of the information on oral cancer to be a 'mix of accurate and inaccurate information.'<sup>17</sup> A final study showed that 50% of the advice in newspaper advice columns was rated inappropriate, with critical issues only partially covered or not covered at all in 76% of the articles, and 58% were rated unsafe or potentially dangerous.<sup>18</sup>

In many cases, those most likely to receive information from family and friends or TV are younger, poorer, have less education and are of minority status. These populations are often those most vulnerable to poorer health outcomes with regard to infant mortality, cancer deaths, diabetes, HIV/AIDS, tooth decay, and injury, and therefore, most in need of accurate and understandable health information.<sup>19-22</sup> These populations also traditionally have less access to traditional care,<sup>21,22</sup> making the issues of source of and trust in health information that much more important.

Although those using and trusting the Internet tend to be younger, more educated and affluent, there are still concerns about the quality of information provided. Although empirical studies of Internet quality have been difficult to evaluate, concerns have been expressed over content quality, including accuracy (degree of concordance of the information provided with the best evidence or with generally accepted medical practice), and completeness or coverage of a topic area.<sup>23</sup>

Use of the Internet and its ability to support people in making informed health decisions may assist in the decentralization and democratization of knowledge about medicine and health from traditional health professionals to others.<sup>24</sup> Furthermore, these Internet and other technologies may reduce disparities through their potential for promoting health, preventing disease, and supporting clinical care for all.<sup>25</sup> Unfortunately, those who have preventable health problems and lack health insurance coverage are the least likely to have access to such technologies.<sup>25</sup> Barriers to accessing technologies include cost, geographic location, illiteracy, disability, and factors related to the capacity of people to use these technologies appropriately and effectively. In addition, certain populations

also have difficulty accessing online health resources because the content or the medium of the application is inappropriate for them. This may be because they have inadequate technology or literacy skills, cannot understand or use health information, have a physical disability or cannot communicate in English.<sup>26,27</sup> Although only about half of the US population has rudimentary or limited reading skills, most health websites are primarily text based and are designed for educated, literate, and non-disabled audiences.

### Interventions

As the number and variety of sources for health information continues to grow, it is imperative that health care consumers be able to understand the information provided and to be able to determine the accuracy of the sources. One strategy that can assist in improving understanding is to provide written and oral information, no matter what source, in a health literate way.

The American Medical Association has produced health literacy tools which focus on patient safety (<http://www.ama-assn.org/ama/pub/about-ama/ama-foundation/our-programs/public-health/health-literacy-program/health-literacy-kit.shtml>).<sup>28</sup> The Institute of Medicine has also initiated reports, workshops, and presentations focused on health literacy available on their website at <http://www.iom.edu>.<sup>29</sup>

When conceptualizing health literacy, it is also important to consider the diversity of persons who interact with the health care system. Well-documented differences have been shown in literacy proficiencies based on educational attainment, poverty, access to resources, and majority vs. minority status.<sup>30,31</sup> Moreover, the way health is communicated and envisioned differs from culture to culture. Failing to acknowledge these differences can contribute to medical errors and non-compliance. Therefore, the interplay of all demographic factors within the individual must be considered in addition to evaluated health literacy levels.

Limitations to the study include those presented by the dataset. Although the ANHCS is a national database and has been conducted since 2005, it has not yet been proven to be reliable or valid. In addition, the survey is conducted from a list-assisted, random digit dial population of all landline telephone numbers in the United States. This presents as a potential limitation as not all persons in the US have landline telephones, resulting in a biased sample. Another stated limitation is the bias presented by the need for literacy to complete the survey. It is possible that inaccuracies occurred in

surveyed use of source of health information as respondents may have answered the survey with sources they felt may have been more acceptable (i.e. health professional vs. TV). However, despite the limitations of the ANHCS, this dataset provided the most information useful for this study.

Future research should continue to monitor use of these sources in order to provide the most current information for providers to reach their intended audience. This is especially important with the continued and increased use of the Internet as a source of information. Additional research should also look at the relationship of use of various sources of information and health behaviors of the surveyed populations. This type of study could provide data on the most effective mechanisms of providing important health information to various populations, potentially resulting in more positive health outcomes.

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