

Effects of Race/Ethnicity and Socioeconomic Status on Health Information-Seeking, Confidence, and Trust

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Abstract: Introduction. It is critical continually to monitor the influence of race/ethnicity and socioeconomic status in health information-seeking, confidence, and trust to ensure that health messages reach those most in need. **Methods.** Using data from the 2007 Health Information National Trends Survey (HINTS), multivariable logistic regression assessed the effects of race/ethnicity, education, and income on health information-seeking, confidence in obtaining health information, and trust of information sources. **Results.** Respondents of lower education were less likely to seek health information, and along with those of lower incomes had decreased confidence in their ability to obtain health information. Blacks, Hispanics, and those of lower income endorsed a lower level of trust in doctors and other health care professionals than non-Hispanic Whites and those of higher income, respectively. **Conclusions.** Improving the development and delivery of health information intended for minority and vulnerable populations may help reduce existing disparities in health information-seeking and care.

Key words: Disparities, communications, information-seeking, race, education, income.

Approximately 70% of all adults in the U.S. actively seek medical or health-related information.¹ Predominant reasons for health information-seeking include illness-related coping, medical decision-making, behavior change, and preventive behavior.² Given this demand for information, it is critical to understand how to optimize health communication in order to reach vulnerable populations most at risk for illness and poor health outcomes.

Studies using data from the Health Information Network Trends Survey (HINTS) show that cancer-related health information-seeking follows patterns associated with race, ethnicity, language, and social class.³⁻⁷ U.S. adults with lower levels of income and education are less likely to search for cancer information than those of higher

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socioeconomic status.³⁻⁶ Hispanics are less likely than non-Hispanics to seek cancer information^{3,6} and, among Hispanics, Spanish speakers are less likely to search for information than English speakers.^{4,6}

Trust in certain important sources of cancer information—such as doctors—also differs by demographic characteristics.^{4,5,7} For example, two studies show that those with less than a high school education are less likely to trust a doctor than those with a college degree, but there are no statistically significant differences in trust by income.^{4,5} While there is some evidence that Hispanics are less likely to trust a doctor than non-Hispanics,⁵ it is possible that this finding may reflect important differences in trust by language and acculturation: a separate analysis of the same data shows that Spanish-speaking Hispanics are more likely to trust a doctor than both non-Hispanic Whites and English-speaking Hispanics.⁴

Similar patterns are observed in confidence in one's ability to obtain cancer information if needed, with higher levels of confidence among those with greater income, but no differences by education.⁶ While non-Hispanic Whites and English-speaking Hispanics are equally confident in their ability to obtain cancer information, both groups are more confident than Spanish-speaking Hispanics.⁶

Taken together, these studies suggest that those who might benefit most from cancer information, namely minority populations and those of lower socioeconomic status, are the least likely to seek it and perhaps also least likely to trust it, even when the source of the information is highly credible. Because patterns in confidence do not reflect actual information-seeking, these studies suggest that there may be barriers to information-seeking among some population sub-groups. Health information-seeking and trust have been shown to be associated with numerous positive outcomes, including increased knowledge,⁷ informed decision-making,⁸⁻¹⁰ improved coping,^{8,11} reduced stress,⁸ management of uncertainty,⁷ self-efficacy,¹² positive emotions¹² and perception of control.^{9,11,13} Therefore, lack of information-seeking and mistrust may have negative health implications. Improvements in health information-seeking and trust may lead to increased adherence to treatment and provider recommendations,^{14,15} and positive changes in health behavior.¹⁰

Racial/ethnic disparities have been observed throughout the health care system, including access to health care, quality of care delivered, and health outcomes.¹⁶⁻²⁵ The cost of these disparities is staggering; a 2009 report commissioned by the Joint Center for Political and Economic Studies found that more than 30% of direct medical costs faced by African Americans, Hispanics, and Asian Americans were excess costs due to health inequities, which totaled more than \$230 billion over a three-year period. Given this enormous cost, as well as the social and emotional toll attributed to differential treatment in the health care system, it is imperative to address contributing factors. Communication has been identified as one such factor, and optimizing the development, delivery, and reach of health information could play a role in improving health care delivery to minority and vulnerable populations.⁴ To do this, it is critical to understand which communication channels are used and trusted most by at-risk populations. Without this knowledge, the existing disparities in health care and health outcomes could increase and put an even greater undue burden on vulnerable populations.

Previous analyses using HINTS 2003 data have focused separately on the examination

of cancer information-seeking, confidence and trust. This paper uses HINTS 2007 data to build upon previous studies to simultaneously examine differences in overall health and medical information-seeking, confidence and trust by race/ethnicity, education and income, including an examination of the most sought after and trusted sources of information. Additionally, given the increasing influence of the Internet and the rapidly changing dynamic in how information is disseminated and received, it provides up-to-date information on how individuals seek out and receive health information. Staying current and informed with regard to patterns of health information-seeking behavior—especially among those most at-risk for poor health outcomes—will help to increase the effectiveness and cost-efficiency of targeted health communication interventions.

Methods

Data. Data for the study were obtained from the Health Information National Trends Survey (HINTS) 2007, a biennial national survey of the U.S. civilian, noninstitutionalized, adult population administered by the National Cancer Institute. The survey was created to assess and monitor changes in cancer-related health communication, knowledge, attitudes and behavior.^{26,27} Although labeled as HINTS 2007, data were collected from January 2008 through May 2008 and consisted of two samples, each selected from a separate sample frame. One sample consisted of a random digit dial (RDD) telephone survey using a Computer Assisted Telephone Interview (CATI) format (n=4,092), and the second was an address-based sample using a mailed questionnaire (n=3,582). This paper presents data from the address-based sample since it contained a greater percentage of non-Hispanic Blacks and Hispanics than did the RDD sample (20% vs. 14.7%). The mailed questionnaire was sent to 7,851 households and completed at least partially by 2,581 households (n=3,582 individuals), which is a response rate of 32.9%. The sample was further reduced to 3,243, which consists of non-Hispanic Whites, non-Hispanic Blacks, and Hispanics. The racial/ethnic category *other* was dropped due to smaller sample size as well as our perceived limitations in making conclusions about a heterogeneous and undefined group of respondents. The HINTS 2007 contains final sample weights so that population-level estimates can be made, as well as a set of 50 replicate sampling weights to correct standard errors.²⁸ Both sets of weights were used in the present analysis. Further details on the study design and methodology can be found at <http://hints.cancer.gov/>.

Measures. The main outcome variables for this study were health information-seeking, and confidence in and trust of health sources. Information-seeking was assessed by the question, “Have you ever looked for information about health or medical topics from any source?” If respondents answered “Yes” to this question, they were then asked, “The most recent time you looked for information about health or medical topics, where did you go first?” Confidence in obtaining health-related information was with the question, “Overall, how confident are you that you could get health-related advice or information if you needed it?” Responses were pre-specified to be dichotomized into two groups: “completely” or “very” confident as opposed to “some,” “a little,” or “no confidence.” Trust of health sources was assessed by the question, “In general, how much would you trust information about health or medical topics from [source]? Would you

say a lot, some, a little, or not at all?" The sources listed are: a doctor or other health care professional, family or friends, newspapers or magazines, radio, Internet, television, government health agencies, charitable organizations, and religious organizations and leaders. Data were coded such that responses were dichotomized into two levels of trust: "a lot of trust" as opposed to "some," "a little," or "no trust."

The main predictor variables of interest included race/ethnicity (non-Hispanic White, non-Hispanic Black and Hispanic), education (below high school, high school, some college and college graduate) and annual household income (below \$35,000, \$35,000–\$75,000, more than \$75,000). Other demographic variables of interest included gender, age, location of residence, occupational status, marital status and number of children under 18.

Analysis. All analyses were run in Stata V11.1 (Stata, 2009). Demographic characteristics were assessed on the total sample. Differences in health information-seeking, sources of health information-seeking, confidence in obtaining health information and trust of health information sources were initially examined by calculating the weighted percent and standard error of responses both in the total population as well as across the racial/ethnic, education and income sub-groups. Chi-squared tests were run to assess differences across sub-groups. Using the survey procedures in Stata to account for the complex survey design, multivariable logistic regression was used to examine the relationship between race/ethnicity, education and income on health information-seeking, confidence, and trust. All demographic characteristics noted in the measures section above were included as covariates.

Results

A total of 3,243 respondents were analyzed. The demographic characteristics of the total sample are displayed in Table 1. The sample consists of more females than males (61.3% vs. 38.7%), and the vast majority were non-Hispanic White (76.4%) followed by non-Hispanic Black (13.6%) and Hispanic (10.0%). There was a roughly even distribution across the levels of educational attainment and annual household income. The majority reported living in metropolitan areas (82.6%).

The frequencies of health information-seeking, confidence and trust among the total sample are displayed in Table 2. The majority report they have recently sought health information (77.7%) and are either "confident" or "very confident" in their ability to obtain health-related information (60.4%). Doctors and other health care professionals are the only resource trusted "a lot" by a majority of the sample (69.2%).

The frequencies and multivariable regression results by race/ethnicity are presented in Table 2. Controlling for all the demographic factors in Table 1, there were no statistically significant differences in health information-seeking and confidence across racial/ethnic categories. However, Hispanics were statistically significantly less likely to trust a doctor or health professional a lot as compared with Whites (OR=0.67, 95% CI: 0.45, 0.99). Blacks were similarly less likely to trust a doctor or health professional as compared with Whites, but this finding was only marginally statistically significant (OR=0.68, 95% CI: 0.45, 1.03).

Table 1.**DEMOGRAPHICS OF THE SAMPLE (UNWEIGHTED)**

| | Total Sample (n=3,243) |
|--|-------------------------------|
| Gender | |
| Male | 1,255 (38.7%) |
| Female | 1,988 (61.3%) |
| Age | |
| 18-34 | 554 (17.2%) |
| 35-49 | 807 (25.0%) |
| 50-64 | 1,077 (33.4%) |
| 65-74 | 427 (13.3%) |
| ≥75 | 357 (11.1%) |
| Race/Ethnicity | |
| Non-Hispanic White | 2479 (76.4%) |
| Non-Hispanic Black | 440 (13.6%) |
| Hispanic | 324 (10.0%) |
| Education | |
| High school diploma and below | 1,029 (31.8%) |
| Some college | 1,055 (32.6%) |
| College graduate | 1,157 (35.7%) |
| Household Income | |
| <\$35,000 | 994 (33.8%) |
| \$35,000-\$75,000 | 996 (33.8%) |
| ≥\$75,000 | 954 (32.4%) |
| Location of Residence | |
| Metropolitan area of ≥1 million residents | 1,684 (51.9%) |
| Metropolitan area of <1 million residents | 995 (30.7%) |
| Non metropolitan area of ≥20,000 urban residents | 213 (6.6%) |
| Non metropolitan area of <20,000 urban residents | 351 (10.8%) |
| Occupational status | |
| Employed | 1,810 (57.9%) |
| Unemployed | 127 (4.1%) |
| Other (homemaker, student, retired, disabled) | 1,189 (38.0%) |
| Marital Status | |
| Married or cohabiting | 1,928 (59.6%) |
| Not married or cohabiting | 1,305 (40.4%) |
| Number of children under 18 | |
| None | 2,272 (70.5%) |
| One or more | 949 (29.5%) |

Table 2.

MULTIVARIABLE ANALYSES OF HEALTH INFORMATION-SEEKING AND TRUST BY RACE/ETHNICITY (WEIGHTED)

| | Frequency, % (Standard Error) | | | | OR ^a (95% CI) | | |
|-------------------------------------|-------------------------------|----------------------|--------------------|-----------------------|--------------------------|-----------------------|-------------------|
| | Total (n = 3,243) | White (n = 2,479) | Black (n = 440) | Hispanic (n = 324) | Black vs. White | Hispanic vs. White | Black vs. His |
| Information-seeking | | | | | | | |
| Seek | 77.7% (1.1) | 81.4% (1.2) | 67.8% (4.0) | 67.5% (4.5) | 0.74 (0.44, 1.24) | 0.88 (0.51, 1.52) | 0.84 (0.39, 1.92) |
| Does not seek | 22.3% (1.1) | 18.6% (1.2) | 32.2% (4.0) | 32.5% (4.5) | Reference | Reference | Reference |
| Confidence of Health Information | | | | | | | |
| Completely/Very confident | 60.4% (1.2) | 62.1% (1.4) | 58.9% (4.1) | 52.9% (4.2) | 1.13 (0.73, 1.74) | 0.93 (0.62, 1.38) | 1.22 (0.73, 2.06) |
| Somewhat/A little/ No confidence | 39.6% (1.2) | 37.9% (1.4) | 41.1% (4.1) | 47.1% (4.2) | Reference | Reference | Reference |
| Trust of Health Source | | | | | | | |
| A doctor /health professional | 69.2% (1.1) | 71.6% (1.0) | 63.3% (3.8) | 61.7% (4.4) | 0.68 (0.45, 1.03) | 0.67 (0.45, 0.99)* | 1.01 (0.59, 1.74) |
| A lot | 30.8% (1.1) | 28.4% (1.0) | 36.7% (3.8) | 38.3% (4.4) | Reference | Reference | Reference |
| Not a lot ^b | | | | | | | |
| Family or friends | 9.0% (0.7) | 9.1% (0.8) | 8.5% (2.1) | 9.1% (2.3) | 0.71 (0.31, 1.63) | 0.86 (0.39, 1.89) | 0.83 (0.30, 2.21) |
| A lot | 91.0% (0.7) | 91.9% (0.8) | 91.5% (2.1) | 90.9% (2.3) | Reference | Reference | Reference |
| Not a lot | | | | | | | |
| Newspapers or magazines | 3.9% (0.4) | 3.4% (0.5) | 7.5% (1.6) | 3.2% (1.2) | 2.62 (1.31, 5.24)* | 1.18 (0.40, 3.53) | 2.21 (0.76, 6.30) |
| A lot | 96.1% (0.4) | 96.6% (0.5) | 92.5% (1.6) | 96.8% (1.2) | Reference | Reference | Reference |
| Not a lot | | | | | | | |

(Continued on p.

Table 2. (continued)

| | | Frequency, % (Standard Error) | | | | OR ^a (95% CI) | |
|---------------------------------|----------------------|-------------------------------|--------------------|-----------------------|--------------------|--------------------------|-------------------|
| | Total (n = 3,243) | White (n = 2,479) | Black (n = 440) | Hispanic (n = 324) | Black vs. White | Hispanic vs. White | Black vs. His |
| Radio | | | | | | | |
| A lot | 2.2% (0.3) | 1.8% (0.4) | 4.6% (1.3) | 2.2% (0.7) | 1.89 (0.77, 4.65) | 1.14 (0.48, 2.71) | 1.65 (0.52, 5.00) |
| Not a lot | 97.8% (0.3) | 98.2% (0.4) | 95.4% (1.3) | 97.8% (0.7) | Reference | Reference | Reference |
| Internet | | | | | | | |
| A lot | 19.1% (1.2) | 18.2% (1.2) | 22.4% (3.0) | 21.0% (3.3) | 1.56 (1.02, 2.39)* | 1.47 (0.96, 2.25) | 1.06 (0.65, 1.71) |
| Not a lot | 80.9% (1.2) | 81.8% (1.2) | 77.6% (3.0) | 79.0% (3.3) | Reference | Reference | Reference |
| Television | | | | | | | |
| A lot | 5.6% (0.6) | 4.1% (0.6) | 13.5% (2.9) | 7.4% (1.0) | 2.16 (1.29, 3.63)* | 1.38 (0.75, 2.55) | 1.57 (0.92, 2.34) |
| Not a lot | 94.4% (0.6) | 95.9% (0.6) | 86.5% (2.9) | 92.6% (1.0) | Reference | Reference | Reference |
| Government health agencies | | | | | | | |
| A lot | 26.9% (1.3) | 24.4% (1.3) | 35.6% (2.9) | 32.8% (4.6) | 1.73 (1.28, 2.34)* | 1.32 (0.81, 2.17) | 1.31 (0.79, 2.17) |
| Not a lot | 73.1% (1.3) | 75.6% (1.3) | 64.4% (2.9) | 67.2% (4.6) | Reference | Reference | Reference |
| Charitable organizations | | | | | | | |
| A lot | 8.8% (0.8) | 6.8% (0.8) | 16.0% (2.5) | 13.6% (3.1) | 2.62 (1.55, 4.42)* | 1.75 (0.93, 3.29) | 1.50 (0.79, 2.85) |
| Not a lot | 91.2% (0.8) | 93.2% (0.8) | 84.0% (2.5) | 86.4% (3.1) | Reference | Reference | Reference |
| Religious organizations/leaders | | | | | | | |
| A lot | 8.0% (0.9) | 5.0% (0.6) | 20.6% (3.5) | 12.9% (3.6) | 4.87 (3.01, 7.88)* | 2.01 (0.94, 4.27) | 2.43 (1.04, 5.71) |
| Not a lot | 92.0% (0.9) | 95.0% (0.6) | 79.4% (3.5) | 87.1% (3.6) | Reference | Reference | Reference |

*p < .05

^aAdjusted for gender, age, education, household income, location of residence, occupational status, marital status, number of children under 18.

^bData were coded such that responses were dichotomized into two levels of trust: "a lot of trust" as opposed to "some," "a little," or "no trust."

Compared with Whites, Blacks were statistically significantly more likely to trust health information acquired from newspapers or magazines, television, charitable organizations, and government health agencies. Furthermore, in comparison with Whites, Blacks (OR=1.56, 95% CI: 1.02, 2.39) and Hispanics (OR=1.47, 95% CI: 0.96, 2.25) were more likely to trust the Internet as a source of health information, although the effect was only of borderline statistical significance among Hispanics (p-value=.076). The most dramatic difference noted was related to trust of health information disseminated by religious organizations and leaders among Blacks compared with Whites (OR=4.87, 95% CI: 3.01, 7.88) and compared with Hispanics (OR=2.43, 95% CI: 1.04, 5.64). Regardless of this increased trust, however, very few Blacks reported actually seeking health information through a non-standard method such as a religious organization or leader (0.3%). Instead, the predominant method used by all racial/ethnic sub-categories to seek health information was through the Internet or a doctor or health care provider (results not shown).

The frequencies and multivariable regression results of health information-seeking, confidence and trust by educational attainment are presented in Table 3. Unlike race/ethnicity, education appeared to have dramatic effects on health information-seeking and confidence. Lower education was associated with both less health information-seeking and confidence, with the most dramatic difference noted between respondents with a high school diploma or less compared with those who had a college degree (information-seeking OR=0.14, 95% CI: 0.09, 0.22; confidence OR=0.44, 95% CI: 0.30, 0.63). Among those with less education, particularly a high school diploma or less, there was a greater likelihood of trust in television and religious organizations and leaders, and a lower likelihood of trust in government health agencies.

Results by income level are presented in Table 4. There were no statistically significant differences in health information-seeking, however compared with those in the highest income category, respondents who reported an annual household income of less than \$35,000 had less confidence in their ability to obtain health information (OR=0.55, 95% CI: 0.39, 0.77), were less likely to trust a doctor or other health professional (OR=0.67, 95% CI: 0.47, 0.97), and less likely to trust the Internet (OR=0.62, 95% CI: 0.39, 0.97).

Discussion

This study clarifies the independent effects of race/ethnicity, education and income on health information-seeking, confidence in obtaining health information and trust in health information sources. Education showed dramatic effects on health information-seeking; both education and income influenced confidence in one's ability to obtain health-related information. Race/ethnicity primarily influenced trust of health information sources.

It is well established that minority and low socioeconomic status populations shoulder an undue burden of illness-related morbidity and mortality in the U.S.,¹⁶⁻²⁴ and elimination of these disparities is one of the major themes of federal health agencies.²⁹ These disparities span the spectrum of medical service, including decreased access to care, quality of care, use of services and poorer adherence to treatment.^{19,30} An underlying factor that may contribute to or exacerbate these issues is a differential pattern

Table 3.

MULTIVARIABLE ANALYSES OF HEALTH INFORMATION-SEEKING AND TRUST BY EDUCATION (WEIGHTED)

| | Frequency, % (Standard Error) | | | OR ^a (95% CI) | |
|----------------------------------|-------------------------------|---------------------------|-------------------------------|---------------------------------|----------------------------------|
| | HS or Below (n=1,029) | Some College (n=1,055) | College Graduate (n=1,157) | HS or below vs. College Grad | Some College vs. College Grad |
| Information-seeking | | | | | |
| Seek | 63.0% (2.0) | 83.1% (1.9) | 93.2% (0.9) | 0.14 (0.09, 0.22)* | 0.41 (0.27, 0.61)* |
| Does not seek | 37.0% (2.0) | 16.9% (1.9) | 6.8% (0.9) | Reference | Reference |
| Confidence of Health Information | | | | | |
| Completely/Very confident | 50.3% (2.6) | 62.0% (2.1) | 73.6% (1.5) | 0.44 (0.30, 0.63)* | 0.65 (0.49, 0.86)* |
| Somewhat/A little/No confidence | 49.7% (2.6) | 38.0% (2.1) | 26.4% (1.5) | Reference | Reference |
| Trust of Health Source | | | | | |
| A doctor /health professional | 67.4% (2.1) | 67.2% (1.7) | 75.2% (1.6) | 0.88 (0.64, 1.21) | 0.76 (0.59, 0.99)* |
| A lot | 32.6% (2.1) | 32.8% (1.7) | 24.8% (1.6) | Reference | Reference |
| Family or friends | 12.0% (1.5) | 6.8% (0.9) | 8.2% (1.2) | 1.63 (0.94, 2.82) | 0.84 (0.49, 1.45) |
| A lot | 88.0% (1.5) | 93.2% (0.9) | 91.8% (1.2) | Reference | Reference |
| Not a lot | | | | | |
| Newspapers or magazines | | | | | |
| A lot | 3.1% (0.6) | 4.2% (0.8) | 4.6% (0.8) | 0.61 (0.30, 1.24) | 0.96 (0.49, 1.86) |
| Not a lot | 96.9% (0.6) | 95.8% (0.8) | 95.4% (0.8) | Reference | Reference |

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Table 3. (continued)

| | Frequency, % (Standard Error) | | | OR ^a (95% CI) | |
|---------------------------------|-------------------------------|-----------------------------|---------------------------------|---------------------------------|----------------------------------|
| | HS or Below (n = 1,029) | Some College (n = 1,055) | College Graduate (n = 1,157) | HS or below vs. College Grad | Some College vs. College Grad |
| Radio | | | | | |
| A lot | 2.4% (0.5) | 2.4% (0.7) | 1.7% (0.4) | 1.47 (0.66, 3.32) | 1.50 (0.58, 3.88) |
| Not a lot | 97.6% (0.5) | 97.6% (0.7) | 98.3% (0.4) | Reference | Reference |
| Internet | | | | | |
| A lot | 17.6% (2.2) | 20.9% (1.6) | 18.5% (1.4) | 1.10 (0.76, 1.58) | 1.31 (1.01, 1.70)* |
| Not a lot | 82.4% (2.2) | 79.1% (1.6) | 81.5% (1.4) | Reference | Reference |
| Television | | | | | |
| A lot | 7.4% (1.1) | 5.6% (1.0) | 3.0% (0.6) | 2.45 (1.38, 4.33)* | 1.98 (1.03, 3.82)* |
| Not a lot | 92.6% (1.1) | 94.4% (1.0) | 97.0% (0.6) | Reference | Reference |
| Government health agencies | | | | | |
| A lot | 22.7% (2.3) | 28.4% (1.7) | 30.8% (1.8) | 0.63 (0.45, 0.88)* | 0.85 (0.64, 1.12) |
| Not a lot | 77.3% (2.3) | 71.6% (1.7) | 69.2% (1.8) | Reference | Reference |
| Charitable organizations | | | | | |
| A lot | 7.8% (1.3) | 10.2% (1.4) | 8.3% (1.1) | 0.95 (0.55, 1.62) | 1.27 (0.85, 1.89) |
| Not a lot | 92.2% (1.3) | 89.8% (1.4) | 91.7% (1.1) | Reference | Reference |
| Religious organizations/leaders | | | | | |
| A lot | 12.4% (2.0) | 6.7% (0.9) | 3.4% (0.6) | 3.03 (1.57, 5.88)* | 1.93 (0.97, 3.82) |
| Not a lot | 87.6% (2.0) | 93.3% (0.9) | 96.6% (0.6) | Reference | Reference |

*p < .05

^aAdjusted for gender, age, race/ethnicity, household income, location of residence, occupational status, marital status, number of children under 18.

^bData were coded such that responses were dichotomized into two levels of trust: "a lot of trust" as opposed to "some," "a little," or "no trust."

Table 4.

MULTIVARIABLE ANALYSES OF HEALTH INFORMATION-SEEKING AND TRUST BY ANNUAL HOUSEHOLD INCOME (WEIGHTED)

| | Frequency, % (Standard Error) | | | OR ^a (95% CI) | | |
|----------------------------------|-------------------------------|-------------------|-----------------|---------------------------------|--------------------------------|---------------------------------|
| | Low ^b (n=994) | Medium (n=996) | High (n=954) | Low vs. High | Medium vs. High | Low vs. Medium |
| Information-seeking | | | | | | |
| Seek | 69.1% (2.7) | 81.7% (2.0) | 86.4% (2.0) | 0.67 (0.39, 1.16) Reference | 0.86 (0.55, 1.35) Reference | 0.78 (0.50, 1.20) Reference |
| Does not seek | 30.9% (2.7) | 18.3% (2.0) | 13.6% (2.0) | | | |
| Confidence of Health Information | | | | | | |
| Completely/Very confident | 50.4% (2.4) | 63.6% (2.5) | 70.2% (2.1) | 0.55 (0.39, 0.77)* Reference | 0.81 (0.57, 1.14) Reference | 0.68 (0.48, 0.97)* Reference |
| Somewhat/A little/No confidence | 49.6% (2.4) | 36.4% (2.5) | 29.8% (2.1) | | | |
| Trust of Health Source | | | | | | |
| A doctor /health professional | 65.4% (2.5) | 70.9% (1.9) | 73.9% (1.9) | 0.67 (0.47, 0.97)* Reference | 0.84 (0.64, 1.10) Reference | 0.80 (0.54, 1.18) Reference |
| A lot | 34.6% (2.5) | 29.1% (1.9) | 26.1% (1.9) | | | |
| Not a lot ^c | | | | | | |
| Family or friends | | | | | | |
| A lot | 10.8% (1.5) | 7.4% (1.0) | 8.1% (1.2) | 1.31 (0.66, 2.60) Reference | 0.90 (0.53 (1.53) Reference | 1.45 (0.91, 2.32) Reference |
| Not a lot | 89.2% (1.5) | 92.6% (1.0) | 91.9% (1.2) | | | |
| Newspapers or magazines | | | | | | |
| A lot | 3.8% (0.7) | 3.8% (0.9) | 4.1% (0.8) | 0.69 (0.23, 2.01) Reference | 0.86 (0.39, 1.87) Reference | 0.80 (0.39, 1.65) Reference |
| Not a lot | 96.2% (0.7) | 96.2% (0.7) | 95.9% (0.8) | | | |

(Continued on p. 1488)

Table 4. (continued)

| | | Frequency, % (Standard Error) | | | OR ^a (95% CI) | |
|---------------------------------|-----------------------------|-------------------------------|-----------------|--------------------|--------------------------|-------------------|
| | Low ^b (n=994) | Medium (n=996) | High (n=954) | Low vs. High | Medium vs. High | Low vs. Medium |
| Radio | | | | | | |
| A lot | 3.0% (0.6) | 2.4% (0.6) | 1.3% (0.5) | 1.47 (0.37, 5.91) | 1.62 (0.49, 5.30) | 0.91 (0.33, 2.49) |
| Not a lot | 97.0% (0.6) | 97.6% (0.6) | 98.7% (0.5) | Reference | Reference | Reference |
| Internet | | | | | | |
| A lot | 16.4% (1.9) | 19.1% (1.9) | 22.7% (1.9) | 0.62 (0.39, 0.97)* | 0.81 (0.55, 1.18) | 0.76 (0.51, 1.14) |
| Not a lot | 83.6% (1.9) | 80.9% (1.9) | 77.3% (1.9) | Reference | Reference | Reference |
| Television | | | | | | |
| A lot | 7.6% (1.4) | 5.6% (1.2) | 3.9% (0.8) | 1.45 (0.67, 3.15) | 1.34 (0.65, 2.77) | 1.08 (0.55, 2.13) |
| Not a lot | 92.4% (1.4) | 94.4% (1.2) | 96.1% (0.8) | Reference | Reference | Reference |
| Government health agencies | | | | | | |
| A lot | 27.7% (2.6) | 27.2% (2.1) | 28.2% (1.8) | 1.00 (0.68, 1.47) | 1.03 (0.76, 1.40) | 0.97 (0.71, 1.33) |
| Not a lot | 72.3% (2.6) | 72.8% (2.1) | 71.8% (1.8) | Reference | Reference | Reference |
| Charitable organizations | | | | | | |
| A lot | 9.2% (1.6) | 9.3% (1.2) | 9.2% (1.3) | 0.80 (0.48, 1.32) | 0.98 (0.66, 1.46) | 0.82 (0.54, 1.24) |
| Not a lot | 90.8% (1.6) | 90.7% (1.2) | 90.8% (1.3) | Reference | Reference | Reference |
| Religious organizations/leaders | | | | | | |
| A lot | 11.7% (2.2) | 6.8% (1.2) | 5.5% (1.2) | 1.12 (0.48, 2.63) | 0.97 (0.47, 1.99) | 1.16 (0.62, 2.17) |
| Not a lot | 88.3% (2.2) | 93.2% (1.2) | 94.5% (1.2) | Reference | Reference | Reference |

*p<.05

^aAdjusted for gender, age, race/ethnicity, household income, location of residence, occupational status, marital status, number of children under 18.

^bLow income represents an annual household income of <\$35,000, medium represents \$35,000-\$75,000, and high represents ≥\$75,000.

^cData were coded such that responses were dichotomized into two levels of trust: "a lot of trust" as opposed to "some," "a little," or "no trust."

OR = Odds Ratio

CI = Confidence Interval

of health-information-seeking, confidence and trust across demographic sub-groups. Results presented here corroborate previous studies which show that cancer-related information-seeking is patterned by race, ethnicity and social class,³⁻⁷ and suggest that minority and low SES populations are less likely to seek or trust health information from a doctor or other health care provider; a pattern that places those most at-risk for poor health outcomes at an even greater disadvantage.

Lack of trust in doctors or health care providers may have particularly negative ramifications, as studies have shown that the communication that takes place during a medical evaluation can influence not only patient satisfaction,³¹⁻³⁶ but also adherence to treatment^{31,37-39} and disease outcomes.^{38,40,41} Given that poor adherence to treatment leads to increased morbidity and mortality and was estimated in 2005 to cost approximately \$100 billion per year,⁴² it is critical to address factors that contribute to poor adherence.

One factor that may underlie lack of trust in doctors and other health care providers and promote disparities is poor communication. As stated in a recent HINTS Brief, "Spanish-speaking Hispanics, individuals with low education, and those living in the poorest households are the least likely to report that their physician explains information in an understandable manner, respects their comments and questions, or involves them in decisions about their medical care."⁴³[p.1] These perceptions are well supported by the literature^{25,44,45} as studies show that health care providers are more verbally dominant with African American patients than with White patients⁴⁶ and consider African American patients to be less effective communicators than White and Hispanic patients;⁴⁷ that physicians spend more time engaged in relationship-building with White than with non-White patients as well as with more educated and affluent patients than with less educated or affluent patients;⁴⁸ that care of African Americans is less participatory than care of Whites,^{45,49,50} and that disparities in care arise in part as a result bias and stereotyping, predominantly by White providers.²⁵ For these reasons, it is critical to work with doctors and other health care providers through communications training and workshops integrated into medical school and continuing medical education to ensure that they set their biases aside and treat all patients with equal respect, attention, and care.

These findings may serve as a blueprint for public health practitioners who wish to disseminate health information more effectively to specific population sub-groups. Research shows that when new information is delivered indiscriminately *via* the mass media it is acquired at a faster rate among those of higher socioeconomic status (the so-called *knowledge gap hypothesis*).⁵¹ Although this gap narrows on topics related to health,⁵² a directed systems-levels approach would improve the efficiency of campaigns designed to reach minority and low socioeconomic status populations. Data presented here show that, after doctors, government health agencies are the most trusted source of health information across all population sub-groups, with approximately one quarter to one third of all sub-groups endorsing a great deal of trust in government health agencies. The Internet is the next most trusted source among all sub-groups. To capitalize on this trust, it is imperative to consider building and promoting online and government resources and making them both accessible and appealing to minority and vulnerable populations. Additionally, more than 20% of Black respondents reported a high level of trust in health information disseminated by a religious organization or leader, but

less than 1% reported seeking health information from this source. A similar pattern was observed for those with a high school education or less. This gap between trust and information-seeking represents a largely untapped opportunity for those who would consider working with religious organizations to disseminate health information to Black communities. Public health partnerships with religious, educational, or other public service organizations, as well as for-profit entities, are essential in order to ensure the development and distribution of tailored educational material and health-related resources to minority and low socioeconomic status populations. Such partnerships could also capitalize on the Internet as a trusted source of information by coordinating free online training workshops designed to instruct minority and low socioeconomic status populations on how to most effectively search for and derive benefit from available health information online.

There are several limitations to this study. First, the design is cross-sectional and thus, causal inferences cannot be made. Second, this data came from a mailed survey printed in English, so there was no information on whether the Hispanic respondents were predominantly Spanish- or English-speaking. It might be assumed, however, that the Hispanic population that spoke or understood little English would be unlikely to fill out and return a questionnaire in English. Third, information on why respondents did or did not seek information, and were more or less confident or trusting, was not available, so additional analyses to investigate further underlying reasons for differences could not be completed. Fourth, it is possible that levels of trust may differ across subtypes of health care providers (physicians *vs.* registered nurses *vs.* community health workers, e.g.) but this could not be assessed in this dataset. Fifth, while the survey asks about the Internet, it does not specifically ask about health information-seeking or trust of specific online resources, such as medical Websites (e.g., WebMD), blogs, or social media. Future research would benefit from a more complete review of specific online resources as they contribute to trust and information-seeking, especially given the diverse ways in which online tools are accessed and used. Finally, while this study attempts to present the independent effects of race/ethnicity and socioeconomic status, these concepts are inter-related in complex ways, making them very difficult to disentangle, and may not be comprehensively captured by existing measures.⁵³⁻⁵⁸ Future research must consider novel ways to delineate further the relationship between health communications, race/ethnicity, and socioeconomic status.

The results presented in this paper help clarify the independent effects of race/ethnicity, education, and income in overall health information-seeking, confidence, and trust. As the technological landscape and the availability and accessibility of information evolves and becomes more complex, health-related disparities may be exacerbated. Public health partnerships with government, nonprofit, and for-profit organizations are necessary to address these disparities. Understanding how health information-seeking, confidence, and trust are associated with race/ethnicity and socioeconomic status will help in the development and delivery of targeted health communications, which may reduce existing disparities and improve long-term health outcomes for those most vulnerable.

Notes

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