Racial/Ethnic Variation in Perceptions of Medical Information Sources
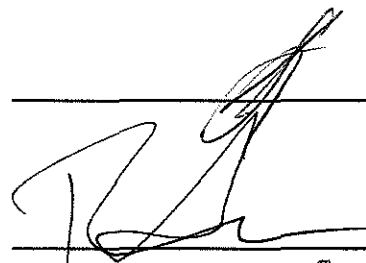
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ABSTRACT

Objectives: This report investigates the independent effect of race/ethnicity on perceptions of the usefulness of 12 different sources of medical information, among a community-based sample.

Methods: We analyzed data from a cross-sectional telephone survey of Latino, Black and White adults (n = 515) in Durham County in 2002. Subjects were asked to rate the usefulness of medical sources (doctors, nurses, pharmacy, health department), non-medical sources (minister/church, community center, friends/relatives, library) and media (internet, newspaper/magazine, radio, television). Logistic regression was used to determine the independent effect of race/ethnicity on ratings of information sources, adjusting for socioeconomic factors and health status factors.

Results: Compared to Whites, Latinos and Blacks were more likely to perceive as useful the health department (OR = 3.7; 95% confidence interval [CI] = 1.4, 9.4 and OR = 2.0; CI = 1.1, 3.5) minister/churches (OR = 4.7; CI = 1.7, 12 and OR = 5.0; CI = 2.8, 9.1), community centers (OR = 6.4; CI = 2.4, 16.0 and OR = 3.2; CI = 1.8, 5.6), television (OR = 4.0; CI = 1.6, 10.0 and OR = 3.9; CI = 2.1, 7.2), and radio (OR = 4.5; CI = 1.9, 10 and OR = 3.2; CI = 1.8, 5.5). Latinos were less likely to report the pharmacy as a useful source (OR = .01; CI = .03, 0.27).

Conclusions: There are substantial racial/ethnic differences in perceptions of certain medical information sources. Medical information designed for minority populations may be more effective if disseminated through particular sources.

BACKGROUND

Introduction

Racial/ethnic minorities continue to suffer a far greater burden of preventable morbidity and mortality, and often experience poorer quality care than White Americans, even controlling for access-related factors.[1-11] In the Institute of Medicine's landmark study describing these racial/ethnic disparities, one recommendation proposed to help eliminate health and healthcare disparities was the empowerment of patients to overcome healthcare barriers and assume healthier behaviors. A crucial component of this strategy is the communication of medical information to minorities. *Healthy People 2010* now lists "health communications" as a focus area and an area that may prove helpful in eliminating racial/ethnic disparities in health.[3] If efforts to activate and empower minorities to overcome disparities are to succeed, these campaigns must consider minorities' use and perceptions of sources of medical information.

Racial/Ethnic Disparities: History, Causes, and Interventions

Racial and ethnic disparities in health in the United States have been documented for over 100 years, yet these disparities still persist.[12] Not only are there disparities in health status, there are also disparities in the receipt of preventive, diagnostic and therapeutic healthcare interventions. [5,7-9,10-11, 13-16] According to census data, minorities currently comprise nearly 30% of the U.S. population, and projections are that this number will be increase to almost 50% by the year 2050.[17] If uncorrected, the excess burden of morbidity, mortality, and

healthcare costs associated with racial/ethnic health and healthcare disparities will pose increasing problems.

While many descriptive papers have noted the existence of health and healthcare disparities, there is little agreement on the causes for the disparities. Both health and healthcare disparities are likely due to a complex mixture of factors, including: economic factors, healthcare access, behavior, environmental factors, culture, genetics, racism, stress, and other social factors.[18] There is little information, however, on the relative contribution to disparities that each of these factors brings and no clear consensus on appropriate interventions to eliminate the disparities.

In *Unequal Treatment*, the Institute of Medicine recommended a number of actions to reduce disparities in healthcare, including improved patient education and empowerment.[1] Improved education may enhance interactions with providers and the healthcare system, and also affect individuals' behavioral choices. An educational approach, however, is not without disadvantages. With this approach, the onus of overcoming disparities may be placed on the victim who is not responsible, rather than on culpable personnel, institutions, or systems. Additionally, while information can be an important resource, information is limited in its potential if a person lacks the time, money, or other resources to act on this information. Nonetheless, the goal of improving knowledge is more easily attainable than eradicating racism or poverty. Thus, patient empowerment and improved dissemination of medical information may be useful as an adjunct to interventions aimed at larger social ills such as racism and poverty.

Medical Information: Types, Benefits, and Trends

Medical information is transferred in numerous contexts, and improved communication of medical information has the potential to positively impact health on several different levels. Medical information is transferred when individuals actively seek information, during the clinical encounter, through public health efforts, and through interactions with friends, family, community entities, radio, television, the internet, and other sources.

Improved transfer of medical information is capable of conferring a variety of different benefits. For the patient, acquisition of accurate and complete medical information can translate into better encounters with clinical personnel, greater awareness and understanding of risks, screening tools and treatments; changed attitudes and beliefs; and potentially better health outcomes. For physicians, improved adherence, more satisfying medical encounters, and better outcomes may raise physician satisfaction. For the healthcare system, improved access to medical information may lead to more efficient use of health services: that is, greater adherence to evidence-based medicine guidelines, increased demand for preventive care and other appropriate services, and decreased demand for inappropriate services. [19-21]

Recent technological advances and changes in healthcare delivery have spurred large-scale changes in medical information sources. Individuals' attitudes toward the people and tools they rely upon for medical information also seem to be changing.[22,23] While doctor-patient relationships are still quite asymmetrical,

there is a trend toward consumer-centered care and patients are attempting to assume more autonomy and control over their care. Additionally, with issues such as the patient bill of rights, HIPAA, malpractice and HMO suits and cost containment strategies, suspicion of the medical establishment is becoming more of an issue.

The tremendous growth in medical information available to the public is even more dramatic than shifts in attitudes. There have been huge increases in the volume of medical information available, the number of sources employed to transfer this information, and the range of issues addressed. These increases are linked to technological advances such as the internet and multimedia tools, but are also linked to other changes. For instance, in the clinic setting, disease/case management approaches to care are relying more heavily on non-physician sources of medical information.[24, 25] Traditional sources of public health messages such as the broadcast media are undergoing changes, including a rise in direct-to-consumer advertising practices by pharmaceutical corporations. Additionally, there has been a renewed interest in "faith-based initiatives" and attempts to form alliances with religious organizations.[26-29] These changes in medical informatics have implications that are especially important for minorities. The phenomenon of unequal access to information and communication technologies has been referred to as the "digital divide."[30] As the amount of information, the variety of resources available, and the skills necessary to access information all increase, the "digital divide" could actually exacerbate health disparities.

Medical Information and Racial/Ethnic Considerations

Racial/Ethnic variation in health knowledge and the exchange of medical information may contribute to racial health disparities. Investigators have cited differences in knowledge about health conditions on a wide variety of subjects, including cardiovascular disease risk factors, cancer risk and treatment, dietary risks, and smoking risks, among others.[31-33] If minorities are less knowledgeable about risks, health maintenance strategies, available treatments, and ways to effectively navigate the healthcare system this could compound the constraints placed on them by biased medical care and lower socioeconomic status. Differences in knowledge may then contribute to the striking differences in hospitalizations and mortality. For example, Pappas et al found that Blacks had over twice the rate of potentially avoidable hospitalization of Caucasians.[34] Furthermore, some have estimated that over 80% of excess deaths in minority and poor populations can be attributable to diseases that are either preventable or treatable.[35]

To understand these variations in medical knowledge, it is useful to examine communication theory. Communication experts contend that there are four basic elements to effective communication: the source (originator of the message), the channel (medium used to deliver the information), the message, and the receiver.[36,37] (Hereafter we will use the term source to refer to both sources and channels, as the survey used the term "source" because most individuals are unaware of the difference, and the terms are often used interchangeably). Using this framework, one can hypothesize a number of explanations for lower health

knowledge among minorities. Racial/ethnic differences in medical knowledge may be linked to less access to well-informed and comprehensible sources of medical information. Alternatively, there may be a lack of effective, culturally sensitive health messages reaching minorities. Another possibility may be the receiver; minorities may have less drive to obtain medical information due to competing concerns and time pressures, or to lower health literacy.

For health communications, the selection of the proper source and channel are seen as particularly important tasks. Beliefs about a channel and its usefulness can affect information seeking and processing.[37] Some have even argued that the channel is more important than the message when seeking to produce attitudinal, behavioral, or informational changes.[38] Previous work has suggested there may be ethnic-specific preferences for sources of medical information. In one of the few studies incorporating Hispanics' perceptions of health information channels, Marin compared responses from 544 Hispanics and 542 Whites regarding sources of information on smoking cigarettes.[39] Marin asked subjects to comment on the credibility, expertise, trustworthiness, and behavioral motivational power. The study revealed widespread differences in perceptions in a number of dimensions, for most of the sources.

Instead of looking at frequency of use, Guidry et al examined individuals' rating of the helpfulness of various sources.[40] In a sample of 593 Black and White cancer patients diagnosed with cancer between 1989 and 1993, they asked subjects to rate the helpfulness of various sources of information for cancer treatment options and side effects. White patients were more likely to rate books

as helpful sources. Blacks were significantly more likely to rate television as a helpful source of medical information. Blacks were also more likely to rate nurses as helpful sources (88.83 and 71.03%, p<0.001), but Whites and Blacks viewed physicians very similarly, with an overwhelming majority (97.94% and 99.12%) of both groups finding physicians to be helpful.

Many of the studies on information sources and race have been descriptive, but only a few have controlled for confounding factors. In 1992, O'Malley et al surveyed 2462 Hispanic (Colombian, Ecuadorian, and Puerto Rican) and Black (Caribbean, Haitian, and U.S. born) persons residing in New York and detected a number of interesting findings.[41] First, they found that Black subgroups were more likely than Hispanics to obtain health information from a doctor or health provider. Second, they found variation in the use of radio for health information, but no variation in the use of television for health information for these two groups. Third, they found that that radio was a less important source of health information as immigrants spent more time in the U.S.

More recently, however, Nicholson et al examined how race affects women's use of health information sources.[42] Using a sample of 509 asymptomatic Black and White women and controlling for socioeconomic factors, they found that black women had <50% odds (95% CI, 0.4-0.8) of using print news media and <60% odds of using computer-based resources (95% CI, 0.2-0.6) compared with white women.

While the above studies provide some baseline information on race/ethnicity and sources of medical information, these studies have some

limitations. The majority of these studies looked at the sources most frequently used by racial subgroups, but they did not look at the perceived usefulness of these sources. While knowledge of information consumption patterns by race is helpful, a more complete picture is possible if one also considers how useful these sources are. That is, if a source of medical information is not readily comprehensible or relevant, or is not perceived as valuable, it is unlikely the source will substantially improve individuals' knowledge or have an impact on individuals' health.

Many of the previous studies examining racial/ethnic differences in medical information sources also used a narrow spectrum of patients. Typically they focused only on comparisons between two racial/ethnic groups, most often Blacks and Whites. Additionally, patients were usually individuals with selected disease conditions (typically cancer or AIDS). Finally, previous studies limited their analyses to traditional sources of medical information; few studies have investigated race and medical information since recent technological and healthcare industry changes.

Just as minorities' perceptions of medical research and medical care reflect past offenses such as the Tuskegee experiments, minorities' perceptions of medical information and the various channels used to disseminate such information may also reflect past and present offenses.[43-46] To better educate racial/ethnic minorities we must understand the sources commonly used for medical information and the attitudes minorities hold toward these information resources. The purpose of this study was to investigate the independent

association between race/ethnicity and perceptions of the utility of various sources of medical information so as to better provide health information.

METHODS

Survey instrument

The data for the study were taken from a cross-sectional, community-based survey designed to assess attitudes, perceptions, and beliefs about access to and quality of healthcare among Whites, Latinos, and Blacks living in Durham County, North Carolina. The survey instrument consisted of 40 items addressing a range of issues, including personal health, perceptions of the healthcare system, personal experiences in the healthcare system, knowledge of racial differences in health and healthcare, and demographic characteristics. We adapted a large portion of the items from a Kaiser Family Foundation survey (Kaiser Foundation Survey of Public Perceptions and Experiences of Race, Ethnicity, and Medical Care).[47] Additionally, we adapted items from the California Health Interview Survey, El Centro Hispano Survey—Proyecto Life and a literature review. [48-49] We made further modifications after conducting a provider survey (administered to a local IPA) and interviewing community leaders. Finally, we conducted interviews with Latino and Black community residents to ensure that an exhaustive list of pre-coded responses was included in the survey. The survey was translated into Spanish, and back-translated to ensure that the English and Spanish versions were consistent. Due to the survey length, we split it into 3

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different components—a core survey, a split-half sample 1 and a split-half sample 2.

Sample

Individuals were eligible for the study if they were over 18 years of age and resided in Durham County households with telephones. The sampling design sought to achieve a sample that would be representative of Durham County households with telephones. Two samples were used for all interviews (Survey Sampling, Inc., Fairfield, Conn). The first sample was obtained using a standard, list-assisted random-digit dialing procedure. Active blocks of telephone numbers (area code + exchange + 2-digit block number) that contained 3 or more residential directory listings were selected with probabilities in proportion to the number of listed phone numbers. After selection, 2 more digits were added randomly to complete the number. The resulting numbers were compared with business directories, and matching numbers were removed. Telephone exchanges with greater than average density of black households were oversampled to increase the overall sample of black respondents. In the second sample, we recruited participants using a random-digit dialing from a list of Latino surname households to obtain an oversampling of Latinos.

Survey Administration

The telephone interviews were conducted by Princeton Review Associates between October 14 and December 16, 2002, in either English or Spanish, based on participant preference. A minimum of 15 attempts were made to contact each

of the sampled telephone numbers. A request for interview was made in 77% (2615/3384) of the households with working numbers. In 54% (1415/2615) of these contacted numbers, a consent for interview was at least initially granted. The proportion of consenting and eligible interviews that were completed was 96% (1175/1415). We calculated the response rate by multiplying 77%, 54%, and 96%, rendering a final response rate of 40%. The analysis presented here, focuses on the 515 participants who responded to the split-half sample 1 and identified themselves as Latino, Black or White.

Dependent and Independent Measures

The primary outcome of interest was individuals' perception of the usefulness of 12 sources of medical information. The sources of medical information were medical sources (doctors, nurses, health department, pharmacy), non-medical sources (ministers/church, friends/relatives, community center, library), and media (internet, newspaper/magazines, television, radio). Participants were asked, "How useful do you think the following sources are for medical information for yourself?" Possible responses were very useful, somewhat useful, not too useful or not useful at all. Other options included, "don't know" and refusal to respond.

This study differs from most studies that analyze race/ethnicity and medical information because of the focus on perceived usefulness rather than frequency of use for each source. Asking about frequency of use may have allowed for more precise responses, but frequency of use measures attitudes about

sources as well as access to sources. By asking the participants to rate the usefulness of each source rather than to report how often they used the source, we were able to obtain a more accurate sense of participants' attitudes about the particular sources. This measure does have the disadvantage of being vaguer, and potentially more difficult to quantify for survey respondents than frequency of use.

Self-reported race/ethnicity was the primary explanatory variable for this study. We asked respondents to indicate if they were of Latino descent and then to indicate their race (Asian, Black, White, or other). We coded as Latino all respondents who indicated they were of Latino descent, excluded responses of Asian or other, and coded the remaining sample as Black or White.

Attempts to classify individuals into racial and ethnic categories has generated a great deal of controversy.[50-53] Determination of the most appropriate terms to use and determination of the appropriate means of assessing one's race or ethnicity have been the main issues of contention. Over the past decade, the term "race" has begun to fall out favor, in place of "ethnicity." Still, a substantial proportion of health data still classifies individuals in racial subgroups, and some have argued that "race" offers some information that may be lost in the term "ethnicity."[52] Methods for determining racial and ethnic classification also vary in different studies, but we feel that self-report was appropriate for this study. We reasoned that individuals' attitudes and beliefs about different sources would be more closely related to attitudes about themselves; hence their self-reported

race/ethnicity would be more relevant than another individual's impression of their race/ethnicity.

Covariates

Socioeconomic characteristics, as well as health and healthcare factors may influence an individual's perceptions of different medical information sources, so we collected data on these characteristics as well. Socioeconomic variables included gender, age, education level, marital status, employment status, financial status, facility with English, and country of origin. We assessed financial status by asking about participants' current household financial situation. Possible responses included: "having difficulty paying the bills, no matter what"; "enough money to pay the bills, but have to cut back"; "enough money to pay bills, but little to spare for extras"; "bills are paid and still have enough for extras"; as well as "don't know" and refused to answer. Although this measure does not use absolute numbers and thus may be vulnerable to subjectivity, it nonetheless provides a relative assessment of participants' financial situation. To better characterize the Latino population, we included a question about Facility with English in all interviews conducted in Spanish. Interviewers asked, "If you have to speak in English on the telephone, would you say you can speak in English very, somewhat well, or not too well?"

Health and healthcare experiences were assessed by self-reported health (excellent, very good, good, fair, poor), diagnosis of five chronic diseases (diabetes, hypertension, lung disease, heart disease, cancer), health insurance

status (private, Medicare/Medicaid, uninsured), possession of a usual source of care, and the time since last physician visit (within the past 1 year, between 1 and 2 years, between 2 and 5 years, and more than 5 years).

Data analysis

We used weighting to adjust for features of the sample design (oversampling of Black and Latino populations) and for any bias that might have resulted from nonresponses. To deal with oversampling, we assigned weights based on the level of disproportionality. We placed telephone numbers into one of two strata based on the density associated with that exchange. Stratum 1 included the balance of exchanges that serve Durham County. In Stratum 2, at least 50% of the exchanges were households classified as Black. We calculated the weight for each stratum by dividing the proportion of Durham County households in each stratum by the proportion obtained in the sample.

In the second stage of the weighting process, we weighted the demographic characteristics of each racial/ethnic subgroup to match Durham parameters for sex, age, and education for each particular subgroup, based on the 2000 Census of the Population and Housing Summary Tape File 3. This stage of weighting incorporated the first stage weight and used sample balancing and the Deming Algorithm to balance the distribution of all variables. The process adjusted for non-responses related to demographic characteristics of the sample and ensured that the demographic characteristics of each racial/ethnic group resembled the demographic characteristics (age, sex, education) of that racial/ethnic group in the Durham population.

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After collecting the independent and dependent measures, we dichotomized several measures. While dichotomizing data can lead to a reduction in information, it can also help to demonstrate trends when dealing with many different categories of data. In this case, we were dealing with 12 different sources, 3 racial/ethnic groups, and a number of covariates, so dichotomizing outcome variables and covariates seemed appropriate. To determine whether a source was perceived as useful or not, we dichotomized the main outcome variable. Responses of "very useful" and "somewhat useful" were collapsed into "*useful*" and responses of "not too useful" and "not useful at all" were collapsed into "*not useful*." (We excluded responses of "don't know" or "refused" from further analysis).

We dichotomized age (less than 40 and 40 years or older), education level (less than high school degree versus greater than high school degree), marital status (married versus other), and employment status (employed versus unemployed). We dichotomized financial situation as less wealthy (participants reporting difficulty paying bills or those able to pay the bills with cutbacks) and more wealthy (those with "enough for extras" or "little spare for extras"). Country of origin was coded as United States or other and facility with English was classified as "very well" or "not very well" (somewhat well or not too well). We dichotomized health as "more healthy" (excellent or very good) and "less healthy" (good, fair, poor), insurance status as "insured" (private and Medicare/Medicaid) and "uninsured," and time since last physician visit as "more recent" (within 1 year) and "less recent" (all responses greater than 1 year).

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After dichotomizing, we performed univariate analyses to assess differences in Latino, Black, and White perceptions of medical information sources. We used Chi-square tests to compare the groups. Next, we performed bivariate analyses to test the association between respondent race/ethnicity and the perceived usefulness of sources, calculating unadjusted odds ratios. We also tested the associations between covariates and perceptions of medical information sources.

Before conducting multivariate analyses, we assessed the collinearity of variables using a correlation matrix. Next we developed multiple logistic regression models to assess the independent association between race and the perceived usefulness of medical information sources. We felt socioeconomic factors and health and healthcare factors would play a role in individuals' perceptions, so we were interested in creating models which would control for these issues. We used a sequential modeling technique and arrived at two models. The first model we created dealt with socioeconomic factors (SES Model) and the second dealt with SES and Health/Healthcare factors (SES & Health Status Model). We included in these models variables found in previous studies addressing frequency of use and variables that demonstrated significant bivariate associations.

The first model included the socioeconomic covariates: age (<40 vs > 40), gender (male vs female), education (< HS degree vs > HS degree), marital status (married vs single), employment status (employed vs unemployed), and financial situation (more wealthy vs less wealthy). The second model included these SES

factors plus health and healthcare factors: perceived health status (more healthy vs less healthy), insurance status (insured vs uninsured), possession of a usual source of care (yes vs no), and time since last physician visit (more recent vs less recent). Data analysis was performed using STATA software (STATA release 8; StataCorp, College Station, Texas).[54]

RESULTS

Sample characteristics

Table 1 shows the distribution of characteristics among the survey respondents. The sample included 197 Whites (38%), 163 Latinos (32%), and 155 Blacks (30%). The Latino subgroup was younger and had a higher proportion of males than the Black and White groups. Education levels varied between the three groups. Over 50% of White respondents had earned a college degree or greater, while less than 10% of Latinos and less than 25% of the Blacks had earned such a degree. Seventy percent of Latinos reported less than a high school diploma, compared to 25% of Blacks and 6% of Whites. Approximately half of the Latinos and Whites were married, but only 29% of Blacks were married. The majority of respondents were employed at the time of the interview. Approximately one fifth of Blacks and one fifth of Latinos reported difficulty paying their bills, while less than 5% of Whites reported this problem. Of the 163 Latinos participating in the survey, approximately 95% were originally from another country, and of the Latinos who chose to do the interview in Spanish, approximately 20% reported that they spoke English "very" or "somewhat well."

The proportion of respondents who reported excellent or very good health was highest for Whites (68 %), followed by Blacks (45%) and Latinos (25%). In the Kaiser study, there were 4 categories of health (excellent, good, fair, poor) instead of 5. The proportion of respondents reporting excellent health was again highest for Whites (32%), the proportion of Blacks and Latinos in excellent was very similar—25% and 24%, respectively. The sample was relatively healthy, but 26.6% of respondents reported hypertension, 13.5% reported lung disease, 8.3% reported diabetes, 6.6% reported heart disease, and 5.2% reported a diagnosis of cancer. The proportion of respondents who had health insurance was much higher for Blacks and Whites (77.8% and 93.3%) than for Latinos (30.2%). Approximately 90% of Blacks and Whites reported having a usual source of care, while 73.3% of Latinos reported the possession of a usual source of care. The majority of survey respondents reported seeing a physician in the past year.

Bivariate Results

Frequencies, by race/ethnicity

Doctors were perceived to be useful sources of information by 95% of Latinos, Blacks, and Whites. Nurses and the pharmacy were also viewed as useful. The highest proportion of respondents finding them useful were Blacks, and the lowest proportion were Latinos. The proportion of respondents finding the Health Department useful varied considerably, with 88.8% of Latinos finding it useful, compared to 68% of Blacks, and 43.6% of Whites.

Non-medical sources of information garnered less support among survey respondents. Still there were some noticeable differences in Latinos, Blacks, and Whites' perceptions of these sources. Among non-medical personnel/institutions, perceptions of the utility of a minister/church and a community center varied widely in different racial/ethnic groups. Large percentages of Latinos (70.1%) and Blacks (63.4%) felt a minister/church was a useful source of information, but only a small percentage of Whites (23.2%) felt that way. A similar trend emerged with regard to community centers: 86.4% of Latinos and 60.5% of Blacks found them useful, compared to 26.8% of Whites. Friends/relatives and the library were seen as useful by similar proportions of each racial/ethnic group.

There were significant differences in respondents' perceptions of the usefulness of the media as sources of medical information. Surprisingly, the internet received roughly similar ratings by each racial/ethnic group. Two thirds of White respondents (66.1%) found the internet a useful source of medical information, and Blacks and Latinos followed closely at 63.8%, and 59.5% respectively. The radio was cited as a useful source of information by 74.8% of Latinos and 62.7% of Blacks, but only 34.9% of Whites. A similar trend was seen for television. Only 52.3% of Whites felt the television was useful for medical information, but 81.5% of Latinos and 81.4% of Blacks felt that the television was useful. The proportion of respondents finding newspapers and magazines useful was highest among Blacks (80.4%), and lower for Latinos and Whites (68.2% and 69.1%, respectively).

Unadjusted Associations, by race/ethnicity

Table 3 shows the unadjusted odds ratios for the likelihood of finding each source of medical information useful, sorted by race and using Whites as the referent group. Among medical sources, there were no significant differences between racial/ethnic groups with regard to doctors or nurses. The pharmacy, however, was viewed as not useful by Latinos (OR 0.37, CI 0.18-0.76). Both Latinos and Blacks were more likely than Whites to perceive the health department as useful (OR 10.25 and 2.76, respectively).

Among non-medical sources, there were also differences in perceptions of certain sources' utility. The odds of rating a minister/church as a useful source of information were 7.78 for Latinos and 5.75 for Blacks. For a community center, the odds ratio was 17.35 for Latinos and 4.18 for Blacks. Perceptions of friends, relatives and the library were sources for which of usefulness were similar in all three groups.

There were racial/ethnic differences in the perceptions of media sources. The radio was viewed as useful by more Latinos and Blacks than Whites. Similarly, the odds ratios for finding the television useful was significantly higher for Latinos and Blacks than for Whites. Blacks were also more likely to report newspapers/magazines as useful (OR 1.83). Interestingly, perceptions of the usefulness of the internet were fairly similar for all three groups.

Unadjusted Associations by SES, Health and Healthcare Factors

Table 4 presents the unadjusted associations between respondent characteristics and perceived usefulness of sources. Age, education, employment status, health status and insurance status exerted significant effects on at least one medical source. Doctors were seen as equally useful by most groups, but employed respondents were more likely than unemployed respondents to report doctors as useful sources of information. Nurses were perceived as useful sources by those who were younger, and the pharmacy was perceived as useful by those who had more education. Those citing the health department as a useful source of information tended to be younger, less educated, less healthy, and uninsured.

Among non-medical sources, age, education, financial status, employment, health state, and insurance status all had effects on at least one source. The odds of perceiving a minister/church as a useful source were higher for those without a high school degree and those who were less wealthy, less healthy and uninsured. Respondents who felt a community center was a useful source of information tended to be younger, without a high school degree, less wealthy, less healthy and uninsured. Friends and relatives were more likely to be perceived as useful by those without insurance. The library was significantly more useful for those under 40 years of age and employed.

For media sources, age, education, financial status, employment status, health, insurance all had effects on respondents' perceptions. The internet was seen as useful by respondents who were younger, had more education, were wealthier, employed, and healthier. Conversely, radio and TV were seen as more

useful by those who had less education and poorer health and those who were uninsured.

Multivariate Analysis

Table 5 presents the independent effect of race on perceptions of the usefulness of medical information sources. After controlling for SES factors and health/healthcare factors, there were still significant differences in the way Latinos and Blacks perceived the health department, pharmacy (for Latinos only), ministers/churches, community centers, television, and radio, compared to the way Whites perceived these sources.

Latinos were almost four times as likely to report the health department as a useful source, and Blacks were twice as likely. The odds of perceiving the pharmacy as a useful source was extremely low for Latinos, even after controlling for SES and health/healthcare factors. The odds of rating a minister/church as a useful source of medical information were 4.7 times higher for Latinos and 5 times higher for Blacks. After adjusting, Latinos were still over 6 times as likely and Blacks were 3 times as likely to report that a community center was a useful source of medical information. The odds of rating television as a useful source of medical information were 4 times higher for Latinos and 3.9 times higher for Blacks. Similarly, the odds of perceiving the radio as a useful source were 4.5 for Latinos and 3.2 for Blacks. After controlling for healthcare factors, the odds of rating newspapers/magazines as useful sources no longer significantly differed between Blacks and Whites.

DISCUSSION

While some groups have suggested reducing disparities in health and healthcare by educating and empowering minorities, there is little information on the effect of minorities' perceptions of the tools used to educate and empower. This study found persistent racial/ethnic variation in the perception of several sources of medical information.

Before examining the independent association between race/ethnicity and perceptions of sources and channels of medical information, we investigated potentially confounding associations involving socioeconomic, health and healthcare factors. Age, education, financial situation, and employment status were all significantly related to perceptions. Younger respondents rated nurses, health department, community center, library, and the internet as useful sources more often than older respondents. Those with less than a high school degree were less likely to believe the pharmacy or the internet was a useful source for medical information, and more likely to believe the health department, ministers/churches, community centers, radio and television were useful. Wealthier individuals were less likely to perceive ministers/churches and community centers as useful sources of medical information, and were more likely to rate the internet as a useful source. Employed individuals were more likely to rate doctors and the internet as useful.

In addition to socioeconomic factors, health and healthcare were related to beliefs about medical information sources. Healthier respondents were more likely to rate the internet as useful, but less likely to rate the health department,

ministers/churches, community centers, radio, and television as useful sources. Uninsured individuals were more likely to rate the health department, ministers/churches, community centers, friends/relatives, radio, and television as useful sources. Nevertheless, after creating multivariate models that controlled for socioeconomic, health and healthcare factors, there were still differences in racial/ethnic minorities' perceptions of the value of pharmacies, health departments, community centers, churches/ministers, television, and radio.

Medical Sources: Pharmacy and Health Department

The relationship between Latinos and pharmacies has received little, if any attention in previous studies. If we had not controlled for insurance status and education, we might have thought that the reason Latinos were less likely to consider the pharmacy useful was due to these factors. Lack of insurance may have meant that this population was less likely to have received a prescription for pharmaceuticals, and thus have little contact with pharmacies. Additionally, Latinos may have been less likely to report the pharmacy as a useful source because pharmacies are more easily accessible and helpful for those with greater education and greater English fluency. The small number of Latinos reporting a pharmacy as useful may reflect the fact that Latinos in this sample were largely immigrants, and did not speak English very well. Still, the relationship detected in this study should be investigated further. If there are cultural or linguistic barriers for Latinos, these barriers should be addressed, especially given the Office of Minority Health's recent release on culturally and linguistically appropriate services. [55]

Similarly, there is little data on how Blacks or Latinos perceive the health department. One study, found that minorities were less likely than whites to find the "government and health professionals" as reliable for HIV/AIDS information. [56] Cunningham et al, however, reported that for AIDS information, "public health" and government sources were more common among Blacks. [57] The results of the present study suggest that compared to Whites, these minority groups would also be receptive to general medical information from the health department. An alternative explanation might be that minorities in the sample simply had greater experience with the health department, but this seems less likely, as the association persisted even after controlling for socioeconomic and healthcare factors.

Non-Medical Sources: Ministers/Churches and Community Centers

This study adds support to the notion that for certain segments of the population, ministers and churches are useful partners in the fight against racial/ethnic disparities. [27-29] Minorities in this study were much more likely than Whites to find these sources useful. Of note, many of the previous studies on this topic have evaluated particular programs and their success, but this study asked about perceptions of ministers and churches in general. Thus, it is likely the positive perceptions were not linked to a particular program, but these sources in general. Additionally, while interventions involving churches have traditionally dealt with predominantly black populations, this study suggests that Latinos are equally receptive, if not more receptive to such interventions. Thus, the study supports the idea of engaging faith communities to spread health and

medical information to minorities. Community centers are another source that is not typically included in studies of minorities and their use or perceptions of information sources. Still, the rise of community-based participatory research has led to a greater attention toward community partners. One study found that using a community center to distribute information regarding child restraints in Hispanic neighborhoods enjoyed some success.[58] The data presented here suggests that minorities are receptive to information from community centers and therefore they should be another entity used to disseminate medical information to minorities.

Media: Television and Radio

Minorities' positive beliefs about the television and the radio are consistent with previous studies on minorities' use of the television and radio for medical information.[40,59,60] Thus, these forms of media are both accessible and viewed favorably by minorities. Television and radio offer several benefits to those who are interested in social marketing campaigns. These channels are able to reach numerous individuals, and they require little skill or action on the part of the receiver. Still, they are often brief and may not provide enough information. Another concern about minorities placing such high value on these channels is the fact that they are increasingly used by groups that may be disseminating biased, incomplete, or incorrect information. Television and radio are now flooded with direct-to-consumer pharmaceutical advertising, potentially dangerous diet and weight loss schemes, and herbal/alternative therapies. This influx burdens patients with the task of sifting through and deciding what information is reliable

and valuable and what is not. Because socioeconomic status and is intertwined with race/ethnicity, and because of competing concerns and other social injustices facing minorities, they may find it more difficult to perform this task. For public health practitioners, these results signal that messages for minorities delivered via radio and television may hold promise. For providers, these results suggest that minority patients should be warned about the risks of mass media sources.

Other Trends and Issues

Brodie et al found a substantial difference in internet and computer use between lower income Blacks and lower income Whites. [30] In our study, Whites rated the internet useful slightly more often than Latinos and Blacks. In fact, the internet was the only source in the survey which received greater support by Whites than Latinos and Blacks. Still, this difference was small, and in our study, we detected no statistically significant differences in perceptions of the usefulness of the internet between Whites and minorities. Thus, at this time it appears that the digital divide in perceptions may not be as salient as the digital divide in access and use highlighted by Brodie et al.

Previous studies addressing interactions between minorities and physicians have suggested communication barriers may exist between physicians and minorities.[61-63] Focusing on perceived usefulness, we were unable to detect any significant trends regarding the usefulness of physicians. Universally perceived as useful sources and possessing more expertise than most other sources, physicians should assume an integral role in the dissemination of medical information. In addition to providing information during office visits, physicians

should be able to caution patients about sources of misinformation, guide patients to high quality sources and reconcile conflicting messages from different sources.

Another interesting finding was the absolute comparisons of individuals' perceptions. For 11 of the 12 sources listed, a minority group had the highest percentage of respondents rating that source as useful. Sensitivity analyses were conducted to determine if minorities were substituting certain sources of information because of a lack of access (health insurance), but no such substitution effect was detected. This finding may be interpreted in several different ways. Minorities may be hungrier for medical information because they have less access to certain sources. Minorities then may overestimate the quality of certain sources and be less discerning. In contrast, Whites may be more skeptical or aware of the deficiencies of certain sources.

Limitations

This study has several limitations. First, features of the study design may have reduced the external validity. We sought to create a sample that was representative of one county's population rather than the United States. Thus some sample characteristics may be particular to Durham. Conclusions based on the Latino subgroup are particularly vulnerable to these limitations. A large majority (95%) of Latinos in our study reported a country of origin other than the United States. In the national study, only 49% of Latinos reported a different country of origin. Because English fluency and the degree of cultural assimilation likely differ significantly among Latino immigrants and individuals who have lived in the US longer, our findings with respect to Latinos should be examined further. While less extreme, similar concerns may be raised with regard to

Blacks. That is, the perceptions of Blacks in Durham, may not be entirely generalizable to all Blacks in the U.S.

Second, we tried to eliminate confounding by controlling for socioeconomic factors and healthcare-related factors, but it is possible that some residual confounding remained. We might have neglected to include important confounding factors, or we could have insufficiently controlled for factors. This possibility is greatest for a variable such as financial status. Because wealth may be a better measure of one's financial situation than income, our question about financial status may be better than a question about income. Still, our measure of financial status did not include absolute number values, but instead used relative values, which were perhaps less clearly distinguishable for participants. Without clear delineations between categories, lower income respondents may have reported their financial status as the same as higher income respondents. This occurrence would have weakened our efforts to control for socioeconomic status.

Third, perceived usefulness may affect one's intention to act on information, but may not always be correlated with the actual benefit gained from a particular source. Therefore it is important to note that this study deals primarily with attitudes about sources, not necessarily the true utility of these sources. Less well-informed individuals may have felt certain sources were very useful, when in actuality they received incomplete or incorrect information. Still, attitudes about sources are important because they may affect how an individual attends to a source, how often the individual consults the source and whether or not the individual actually uses the information he/she receives.

Some final limitations are common ones encountered in many community based surveys. Both the number of respondents and the response rate could have been higher. Additionally this data is limited to households with telephones and is based on self-report rather than any official medical records. The low response rate is an issue that should be discussed further. A low response rate suggests the possibility of a selection bias, which would limit the generalizability of a study. Considered in context, however, our response rate may not be as large a concern as it may initially seem. First, the national Kaiser survey that this survey was modeled after had a response rate of 49%, only slightly higher than ours. Second, comparing a few of the health characteristics of the sample with the characteristics of the U.S. population (using data from the National Center for Health Statistics) revealed only minor differences.[64] Third, comparing our response rate to those found in the literature may be difficult, as methods of calculating response rates vary and authors do not always report which method they employed. Fourth, telephone surveys typically have lower response rates than in-person interviews. Finally, it has been noted that even the response rates for national surveys in the U.S. have been declining.[65]

Conclusions

Using cross-sectional survey data, we found racial/ethnic differences in perceptions of the usefulness of various sources of medical information. Blacks and Latinos were more likely than Whites to perceive health departments, ministers, churches, community centers, television and radio as useful sources. This variation could not be entirely explained by socioeconomic factors or

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healthcare factors. Furthermore, some of these differences were quite large in magnitude, suggesting clinical significance, as well as statistical significance. These findings suggest that perceptions of medical information sources do in fact vary by race/ethnicity, and this variation is worthy of further consideration.

To effectively communicate health information, one should consider factors related to the message, source, and receiver. When constructing messages designed for minorities, health professionals have begun to realize they should consider race/ethnicity when creating the format and content of the message. This present study suggests that race/ethnicity should also be considered when selecting the source that will be used to disseminate the message. Finally, the target population and its members' ability to interpret messages should be considered.

Despite these general considerations for disseminating information to target populations, health professionals have still found it difficult to construct high quality informational messages that reach minorities, augment their health knowledge base and alter their behaviors. Therefore attention should be given to the message, source and target population. More work should be done to better characterize the features of a message that can enhance the receptivity of minorities toward messages. Additionally, more research should be performed to learn more about preferred sources. Sources deemed useful by minorities should be utilized to spread messages that are particularly relevant to these groups. Sources not seen as useful to minorities should be examined, and if possible alterations should be made to make these sources more acceptable to minorities.

Furthermore researchers should investigate the link between positive attitudes about a source, how individuals attend to the message, and the resulting health outcomes.

Future Studies

The subject of race/ethnicity and the transmission of medical information is a fertile area for further investigation, as it is an important topic that has received little previous attention. Surveys similar to this present study should be conducted with larger populations that are more representative of the U.S., including rural and urban areas, and individuals from all regions of the U.S. While a randomized-controlled trial comparing the effectiveness of different sources of information may provide stronger evidence supporting particular sources, such a trial would be quite difficult to design and implement. A longitudinal study might be better suited to demonstrate whether using sources perceived as useful by minority populations substantially affects health knowledge and behaviors.

Future studies should also investigate the motivational power associated with different sources and how individuals reconcile conflicting messages from different sources. Additionally, future studies might examine the type of information sought (prevention, acute care, emotional support) by different populations. Studies might also assess whether minorities' positive perceptions of medical information from television and radio are based on TV ads, infomercials, talk shows, news segments, or other formats. Finally, and perhaps most importantly, future studies should also investigate the consumers of medical

information. Along with the information source, the consumer is a key dimension to consider in a communication effort. As the amount of available information grows, determining consumers' abilities to assess the quality of various sources will be a critically important task.

Table 1. Characteristics of Survey Respondents, By Race				
Characteristics	Latino (n=163)	Black (n=155)	White (n=197)	Total** (n=515)
Demographics				
Gender (%)				
Female	42.3	59.7	54.2	55.2
Age (y)				
Mean (SD)	34.9	43.3	45.7	43
Education Level (%)				
< than HS diploma	69.2	25.0	6.0	18.5
HS diploma	17.2	26.4	19.1	21.6
> HS, some college	5.9	27.9	23.2	23.5
>=College degree	7.7	20.8	51.7	36.4
Marital Status (%)				
Married	49	29.9	52.1	43.5
Employment Status (%)				
Employed	71.2	63	62.8	63.4
Financial Status (%)				
Bills paid, extras	9.4	34.7	50.0	40.8
Bills paid, little extras	39.3	33.6	34.5	34.6
Bills paid, cut backs	24.7	10.1	10.2	11.4
Difficulty paying bills	20.3	19.3	3.5	10.9
Refused	8.5	2.1	1.8	2.3
Facility with English* (%)				
Very Well	4.3			
Somewhat well	16.4			
Not too well	79.3			
Country of origin (%)				
U.S.	4.8	97.0	94.9	88.0
Health Status				
Self-reported health (%)				
Excellent	11.7	14.8	26.7	21.0
Very Good	13.5	30.4	41.7	35.1
Good	37.6	30.4	22.8	26.9
Fair	34.1	21.5	4.1	13.2
Poor	3.2	2.9	4.7	3.9
Diagnosis of (%)				
Diabetes	9.0	13.2	4.8	8.3
Hypertension	20.7	30.7	24.6	26.6
Lung Disease	3.3	16.6	13.0	13.5
Heart Disease	3.5	6.7	6.9	6.6
Cancer	0.60	5.6	5.7	5.2
Health Insurance (%)				
Private	28.2	53.6	75.7	63.3
Medicare/Medicaid	1.7	21	15.8	16.6
Uninsured	69.8	22.2	7.7	18.5
Uncertain/Refuse to Answer	0.2	3.2	0.7	1.6
Have a Usual Source of Care (%)				
Yes	73.3	90.9	90.5	89.2
Time since last MD visit (%)				
<= 1 yr	62.0	86.1	82.0	81.8
1-2 years	17.2	7.8	8.7	9.1
2-5 years	10.7	3.5	4.2	4.5
> 5 years	10.1	2.6	5.1	4.6

*Facility with English was only assessed in the 138 respondents who chose to complete the interview in Spanish.
**Sample size reflects total number of respondents in each category. For a few categories, the sample size varies slightly as a result of nonresponders. The sample size ranged from 511 to 515.

Table 2. Proportion of Respondents Perceiving Medical Information Sources as "Very" or "Somewhat Useful," By Race

Source	Latino % (n=162)	Black % (n=155)	White % (n=197)	Total % (n=514)	p-value
Medical Personnel/Institutions					
Doctors	96.7	98.8	95.9	97.1	0.2465
Nurses	84.9	95.5	87.9	90.5	0.0413
Pharmacy	73.9	94.8	88.5	89.6	0.0022
Health Department	88.8	68.0	43.6	56.6	<0.0001
Non-medical Personnel/Institutions					
Minister or Church	70.1	63.4	23.2	42.2	<0.0001
Community Center	86.4	60.5	26.8	44.5	<0.0001
Friends or Relatives	77.9	74.7	69.9	72.4	0.4329
Library	76.4	72.5	65.8	69.2	0.2305
Media					
Internet	59.5	63.8	66.1	64.7	0.6764
Newspapers/Magazines	68.2	80.4	69.1	73.3	0.0505
Radio	74.8	62.7	34.9	48.8	<0.0001
TV	81.5	81.4	52.3	65.7	<0.0001

Table 3. Unadjusted Associations between Race/Ethnicity and Perceived Usefulness of Medical Information Sources

Source	Latino OR (95% CI)	Black OR (95% CI)	White OR (95% CI)
Medical Personnel/Institutions			
Doctors	1.25 (0.37-4.27)	3.39 (0.49-23.35)	1.00 (Referent)
Nurses	0.78 (0.35-1.72)	2.92 (0.98-8.70)	1.00
Pharmacy	0.37 (0.18-0.76)†	2.37 (0.88-6.40)	1.00
Health Department	10.25 (5.71-18.41)†	2.76 (1.63-4.65)†	1.00
Non-medical Personnel/Institutions			
Minister or Church	7.78 (4.33-13.95)†	5.75 (3.33-9.92)†	1.00
Community Center	17.35 (9.05-33.27)†	4.18 (2.45-7.10)†	1.00
Friends or Relatives	1.52 (0.77-3.02)	1.27 (0.73-2.20)	1.00
Library	1.68 (0.95-2.97)	1.37 (0.79-2.37)	1.00
Media			
Internet	0.75 (0.43-1.32)	0.90 (0.54-1.52)	1.00
Newspapers/Magazines	0.95 (0.53-1.73)	1.83 (1.01-3.29)†	1.00
Radio	5.52 (3.16-9.65)†	3.14 (1.89-5.20)†	1.00
TV	4.01 (2.26-7.13)†	4.00 (2.28-7.02)†	1.00

Table 4. Unadjusted associations between respondent characteristics and perceived usefulness of medical information sources										
Information Source	Male vs Female	Age < 40 vs Age ≥ 40	Less than HS degree vs HS degree or greater	More wealthy vs Less wealthy	Married vs Single	Employed vs Unemployed	More healthy vs Less healthy	Insured vs Uninsured	USOC vs No USOC	More recent vs Less recent MD visit
Medical Personnel/Institutions										
Doctors	1.5 (0.4-5.9)	1.0 (0.2-3.9)	2.5 (0.7-8.7)	0.6 0.1-2.6)	0.9 (0.2-3.6)	7.0 (1.6-30.2)†	0.8 (0.2-3.5)	0.5 (0.1-2.2)	2.1 (0.4-10.9)	1.6 (0.3-8.0)
Nurses	1.1 (0.5-2.4)	2.4 (1.1-5.6)†	1.2 (0.5-3.0)	0.8 (0.3-2.3)	0.9 (0.4-2.1)	1.0 (0.4-2.2)	1.1 (0.5-2.5)	0.5 (0.2-1.1)	0.9 (0.3-2.8)	0.7 (0.3-2.0)
Pharmacy	0.8 (0.4-1.6)	1.6 (0.8-3.2)	0.3 (0.1-0.7)†	1.1 (0.5-2.5)	1.0 (0.5-1.9)	1.1 (0.5-2.3)	1.1 (0.5-2.1)	0.7 (0.3-1.6)	1.1 (0.4-3.1)	1.4 (0.6-3.2)
Health Department	0.8 (0.5-1.3)	1.9 (1.2-3.0)†	3.2 (1.5-6.7)†	0.6 (0.3-1.1)	0.7 (0.4-1.1)	1.1 (0.7-1.8)	0.6 (0.4-0.9)	0.2 (0.1-0.5)†	0.6 (0.3-1.3)	0.7 (0.4-1.2)
Non-medical Personnel/Institutions										
Minister or Church	0.8 (0.5-1.2)	1.0 (0.6-1.6)	3.7 (2.0-7.2)†	0.6 (0.3-1.0)†	0.8 (0.5-1.3)	0.7 (0.4-1.1)	0.4 (0.2-0.6)†	0.4 (0.2-0.7)†	0.8 (0.4-1.6)	0.9 (0.5-1.6)
Community Center	0.7 (0.5-1.2)	1.9 (1.2-2.9)†	3.9 (2.0-7.6)†	0.5 (0.3-0.9)†	0.8 (0.5-1.2)	1.2 (0.7-1.9)	0.5 (0.3-0.8)†	0.2 (0.1-0.4)†	0.9 (0.4-1.7)	0.9 (0.5-1.6)
Friends or Relatives	0.8 (0.5-1.3)	1.5 (0.9-2.5)	0.8 (0.4-1.5)	0.9 (0.5-1.8)	1.0 (0.6-1.7)	0.9 (0.5-1.6)	1.1 (0.6-1.8)	0.5 (0.3-0.9)†	1.0 (0.5-2.0)	0.8 (0.4-1.6)
Library	0.7 (0.4-1.2)	2.0 (1.2-3.3)†	0.7 (0.4-1.3)	0.7 (0.4-1.3)	1.6 (1.0-2.7)†	1.9 (1.1-3.1)†	0.8 (0.5-1.3)	0.8 (0.4-1.4)	1.0 (0.4-2.1)	0.6 (0.3-1.2)
Media										
Internet	1.0 (0.6-1.7)	2.9 (1.8-4.8)†	0.4 (0.2-0.7)†	1.9 (1.1-3.3)	1.3 (0.8-2.1)	2.9 (1.8-4.8)†	2.2 (1.3-3.6)†	1.3 (0.7-2.2)	0.8 (0.4-1.8)	1.2 (0.6-2.2)
Newspapers/Magazines	0.6 (0.4-1.0)	0.9 (0.5-1.5)	0.8 (0.4-1.4)	1.1 (0.6-2.1)	1.0 (0.6-1.7)	1.2 (0.7-2.1)	0.7 (0.4-1.1)	0.6 (0.3-1.2)	2.0 (1.0-4.1)	1.6 (0.9-3.1)
Radio	0.8 (0.5-1.2)	0.8 (0.5-1.3)	1.9 (1.0-3.6)†	0.8 (0.4-1.3)	1.2 (0.7-1.8)	1.6 (1.0-2.5)	0.5 (0.3-0.8)	0.5 (0.3-0.9)	0.9 (0.4-1.7)	1.1 (0.6-2.0)
TV	0.8 (0.5-1.3)	0.9 (0.5-1.4)	2.2 (1.0-4.6)†	0.8 (0.4-1.5)	0.8 (0.5-1.2)	0.9 (0.5-1.5)	0.6 (0.3-0.9)†	0.5 (0.3-0.9)†	1.3 (0.7-2.6)	1.5 (0.8-2.7)

Data represent odds of perceiving the source as "very" or "somewhat" useful for individuals with the specified characteristic compared with respondents withouth the chosen characteristic.

More Wealthy refers to respondents stating that after paying bills, they had enough money for special things or at least a "little spare money" for special purchases.

Less Wealthy refers to those who have to make cut backs to pay bills or have difficulty paying bills.

More Healthy refers to respondents reporting that they were in Excellent or Very Good Health, while Less Healthy referred to those reporting Good, Fair, or Poor health.

USOC refers to respondents reporting possession of a Usual Source of Care

More Recent visit refers to respondents who had seen a physician in the past 12 months.

Table 5. Unadjusted and Adjusted Associations between Race/Ethnicity and Perceived Usefulness of Medical Information Sources among Latino and Black Respondents

Source	LATINOS				BLACKS		
	Unadjusted	Model 1	Model 2		Unadjusted	Model 1	Model 2
		Socioeconomics	Socioeconomics + Health Status			Socioeconomics	Socioeconomics + Health Status
	Odds Ratio (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)		Odds Ratio (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Doctors	1.2 (0.4-4.3)	0.6 (0.2-2.5)	0.4 (.03-5.3)		3.4 (0.4-23)	2.3 (0.2-23)	2.1 (0.2-23)
Nurses	0.8 (0.3-1.7)	0.5 (0.14-1.5)	0.3 (.07-1.1)		2.9 (0.9-8.7)	2.6 (0.8-8.7)	2.4 (0.6-8.8)
Health Dept	10 (5.7-18.4)°	5.9 (2.6-13)*	3.7 (1.4-9.4)*		2.8 (1.6-4.7)*	2.3 (1.3-4)*	2 (1.1-3.5)°
Pharmacy	0.4(0.2-0.8)*	0.2 (.09-0.4)°	.01 (.03-0.27)°		2.4 (0.9-6.4)	2.2 (0.8-6.4)	1.9 (0.6-5.6)
Ministers/Churches	7.8 (4.3-14)°	6.6 (2.8-15)°	4.7 (1.7-12)*		5.7 (3.3-9.9)*	5.4 (3-9.6)°	5 (2.8-9.1)*
Community Ctr	17.3 (9-33)*	9.3 (3.9-21)*	6.4 (2.4-16)*		4.1 (2.5-7.1)*	3.6 (2.1-6.3)°	3.2 (1.8-5.6)°
Friends/Relatives	1.5 (0.8-3.0)	2.4 (0.8-6.8)	1.7 (0.6-4.8)		1.3 (0.7-2.2)	1.4 (0.8-2.4)	1.3 (0.7-2.3)
Library	1.7 (0.9-2.9)	1.47 (0.7-3.3)	1.1 (0.5-2.7)		1.4 (0.8-2.4)	1.6 (0.9-2.9)	1.4 (0.8-2.8)
TV	4 (2.3-7.1)°	6.4 (2.9-13)°	4 (1.6-10)*		4 (2.3-7.0)*	3.4 (1.9-5.9)°	3.9 (2.1-7.2)°
Radio	5.5 (3.2-9.6)°	4.7 (1.9-11)*	4.5 (1.9-10)*		3.1 (1.9-5.2)°	4.1 (2.3-7.3)°	3.2 (1.8-5.5)°
Internet	0.8 (0.4-1.3)	0.7 (0.3-1.7)	0.9 (0.3-2.4)		0.9 (0.5-1.5)	1.1 (0.6-1.9)	1.1(0.6-2.1)
Newspaper/Magazines	0.9 (0.5-1.7)	1.2 (0.5-2.9)	0.8 (0.3-2.1)		1.8 (1.0-3.3)*	2 (1.0-3.9)*	1.7 (0.9-3.4)

Data represent odds ratios comparing Latino vs white and black vs white, respectively

Model 1 (SES): age, gender, education, marital status, employment, financial situation

Model 2 (SES +Health, Healthcare): Incorporates Model 1 (SES factors) as well as: self-reported health, insurance status, time since last physician visit, and possession of a usual source of care

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