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Quality of Minority Health Communication: An Analysis of Hispanic-Targeted Health Websites

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ABSTRACT: The Internet has become one of the most used forms of health communication media. Using the Health on the Net code of conduct, this study examined the quality of health information available on the Internet for one of the United State's fastest growing minorities, Hispanics. When comparing Hispanic-targeted websites with those that target the majority population, this study found significant differences with respect to quality. Specifically, sites targeting Hispanics had a lower level of quality than those that targeted the majority population.

KEYWORDS: Health communication, Hispanic health, website quality, knowledge gap

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The Internet provides a vast range of possibilities and strategies for those in health communication. Health practitioners specifically note the medium allows them to provide carefully targeted and interactive messages in a low-cost format (Cheong & Wilkin, 2005). However, while the Internet is used by many searching for answers to health question, little is known about racial disparities in quality of online information (Kind, Wallace, & Moon, 2008). Wyatt (1997) stated that although surfing the web provides an excellent method for patient and professionals to access clinical knowledge, unless we evaluate the quality of clinical sites and their effects on users, we risk drowning in a sea of poor-quality information.

When evaluating online health information, studies have been conducted in regards to the digital divide, or access to online information. These studies found that while minority groups, continues to lag behind the majority population, their numbers are increasing. For example, the number of Hispanics using the Internet has increased, from 54% to 64% (Livingston, Parker, & Fox, 2009). In 2008, 81% of Hispanics who were online had Internet access at home, and 76% had broadband connections (Fox, 2009). In addition, studies show that this population is turning to the Internet to seek medical answers and treatments. Among those Hispanics with online access, 56.5% have looked for health or medical information online either for themselves or someone else (Hesse, et al., 2005).

Hispanics who use the Internet for health information may do so because of lack of insurance, time, or knowledge of the health care system. English as a second-language also plays a part in their increased use of health-related Internet sites. Hispanics reported the Internet is a cheaper, easier, and faster source of health information. As a result, many feel more comfortable finding information online as opposed to using traditional medical facilities (Fox, 2009).

Analyzing the quality of Hispanic-targeted health information sites is important because while other websites that target minorities have been studied for quality (Kind, Wallace, & Moon, 2008), Hispanic-targeted websites have yet to be analyzed. It is imperative that we begin to investigate the health information targeting this group as Hispanics are the fastest growing minority group in the United States. As of 2002, one in eight people (13.3%) in the United States were Hispanic, and it is projected that by the year 2025, 24.4% of the nation's population will be Hispanic (Rojas-Guyler, Wagner, & Chockalingam, 2006). As a result, more than 45 million people may be receiving inaccurate, out-dated, and unaccredited information when seeking health answers online. This begs the question, what is the quality of the online health information Hispanics are viewing? Using Health On the Net Foundation (HON) guidelines, this study investigates and compares the quality of health information targeting both Hispanic and majority populations. Is the information equitable or is one group receiving information of a lower quality?

Standardized Quality for Online Health Information

HON was created to help unify and standardize the quality of medical and health information available on the Internet. Of specific concern was the validity of presented health data, quality of online medical advice, and lack of scientific data supporting claims related to commercially available treatments. In addition, health websites often fail to include necessary information such as the source of document, e-mail addresses, or dates associated with information updates. As a result, in 1996 HON proposed guidelines for online health information providers when they published the first version of the HON Code of Conduct (HONcode) (Boyer, Selby, Scherrer, & Appel, 1998). The HONcode involves eight evaluation principles, which include:

1. Authoritative: qualifications of authors are indicated
2. Complementarity: information provided supports but does not replace the doctor-patient relationship
3. Privacy: privacy and confidentiality of personal data submitted is respected
4. Attribution: sources of published information are cited and dated
5. Justifiability: claims are backed up with scientific evidence
6. Transparency: information is easily accessible, i.e. clearly presented and site is operational
7. Financial disclosure: statements declaring the site's source of funding are included
8. Advertising policy: sites displaying banner ads have a policy in place to distinguish between editorial and advertising content (Health on the Net Foundation, 2011)

Currently, the HONcode is one of the most widely accepted references for online health and medical publishers and is visited by 27,000 visitors from around the world each day. In addition, HON has certified more than 7,300 websites originating in 102 countries (Health on the Net Foundation, 2011).

Knowledge Gap Hypothesis, Hispanics, and the Internet

While there has been an expansion of health information online (Cline & Haynes, 2001), often the information does not benefit all equally. For example, information seeking behavior can be linked to ethnicity and socio-economic status (SES) (Bolt & Crawford, 2002). Knowledge gap hypothesis suggests that this inequality of health information exists because of a lack of information flow. In other words, as information is distributed through mass media channels, segments of the population with higher SES usually acquire the information at a rate that exceeds that of those with a lower SES (Donohue, Tichenor, & Olien, 1975; Tichenor, Donohue, & Olien, 1970). As a result, the more information that is provided via these channels, the wider the knowledge gap that exists between the groups.

In 2009, 34% of Hispanics living in the United States were classified as living below the poverty line, compared with 13% of the majority population (Kaiser Family Foundation, 2009). This means that more Hispanics have a lower SES than those in the majority population. In addition to having a lower SES than the majority population, Hispanics also suffer from several health disparities including but not limited to diabetes (National Institute of Diabetes, 2005), breast cancer (Abraido-Lanza, Chao, & Gammon, 2004), sexually transmitted diseases (CDC, 2004; CDC, 2005), obesity, and cervical cancer (CDC, 2006).

Researchers have attempted to explain the knowledge gap as they investigated various variables such as cognitive complexity, media use, issue involvement and motivation (Rucinski, 2004; Viswanath & Finnegan, 1996). Others have focused on communication skills and the ability to process information (Eveland, 2002; Grabe, Lang, Zhou, & Bolls, 2000), prior knowledge regarding specific issues (Hsu & Price, 1993), selective exposure (McLeod & Perse, 1994), and individual motivation (Bonfadelli, 2002). However, as noted by Cline and Haynes (2001), there is a limited amount of research focusing on the quality of the information and how this may impact the knowledge gap in relation to ethnicity. As a result, the following research question is posited:

RQ1: Is the quality of online health sources targeting Hispanics the same as the quality of sources that target the majority population?

Method

This study used a content analysis to compare the quality of health information on websites targeting the majority population with that of those targeting Hispanics. Quality was evaluated using the eight principles outlined in the HONcode (Health on the Net Foundation, 2011). The principles were operationalized, with each of the principles containing between two and six item operationalizations (see Table 1). Items were coded using a Likert scale that included always (5), often (4), sometimes (3), seldom (2), never (1), and not applicable (0).

Table 1. Means and Standard Deviations for Health Source Quality Measures

Quality Measures		Majority	Hispanic
		<i>M/SD</i>	<i>M/SD</i>
Item	Authoritative:		
1	Medical information is attributed to an author, webmaster, editor, etc.	4.3/.78	4.5/.67
2	The qualification of the information provider is clearly stated (i.e. health professional).	3.0/.96	3.1/1.1
3	If the information provider is a medical doctor, his/her specialty is mentioned.	2.6/1.1	1.7/1.4
4	All acronyms relating to degrees or affiliations are explained.	1.4/.88	.74/.59
5	Medical or health advice provided and hosted on the site is given by medically trained and qualified professionals.	3.4/.76	2.7/1.5
6	Advice offered from a non-medical individual or organization is clearly labeled as such.	3.2/.87	2.8/1.3
	Complementarity		
1	Information supports, but doesn't seek to replace, the doctor-patient relationship	5.0/.15	3.8/1.8
2	Information is available about the site's mission, purpose and intended audience	5.0/.15	4.5/1.3
3	Information is available about the organization behind the website (eg. its mission)	4.4/1.4	4.0/1.8
	Privacy		
1	Privacy policies are available regarding confidential, private or semi-private information	4.8/1.0	2.1/2.1
2	Visitors are notified if their personal data will be recorded in a database (eg. if personal data are used by third party or other companies).	4.7/1.1	2.1/2.1
	Attribution		
1	Sources of medical content are provided (e.g. scientific or official sources)	3.4/.82	3.5/1.7
2	Links are provided to information sources	3.6/1.0	3.4/1.5
3	Medical content (page or article) has specific dates of creation and modification	4.6/.80	3.9/1.6
	Justifiability		
1	Claims are backed up with scientific evidence	2.7/1.4	2.4/1.6
2	All health product brand names are identified (eg. with ®)	2.4/2.3	.58/1.3
3	Alternative therapies or products (including generics) are included.	2.2/2.1	.48/1.2
	Transparency		
1	Information is accessible and clearly presented	5.0/.21	4.9/.41
2	The editor or authors can be contacted (eg. e-mail address or contact form).	4.8/.79	4.7/1.1
	Financial disclosure		
1	Includes a statement declaring its sources of funding (e.g., government agency, etc.)	3.2/2.4	4.3/1.6
2	Conflicts of interest are disclosed.	.57/1.5	.38/1.3
	Advertising policy		
1	Advertising policy explaining differences between editorial and advertising contents.	3.2/2.3	.02/.16
2	Advertisements & promotional information easily identifiable	3.6/2.2	.12/.80

In January 2010, both Google and Yahoo search engines were used to search for the key term “health” (majority sample) and “Hispanic health” or “Latino health” (Hispanic sample). The top 35 results from each of these searches were considered for inclusion in the study, providing a preliminary sample of 70 majority-targeted sites and 70 Hispanic-targeted sites. Duplicate and irrelevant sites were discarded resulting in a final sample of 42 majority-focused sites and 39 minority-focused sites. Coding was conducted by a graduate student and 20 percent of the sample was coded by a professor in order to determine intercoder reliability. The intercoder reliability estimates were satisfactory and ranged from .902 to 1.00 using SPSS macros for Krippendorff’s alpha (Hayes & Krippendorff, 2007). Krippendorff’s alpha is appropriate for measurement level variables from nominal to ratio and accounts for chance agreement, making it a more conservative estimate of reliability (Lombard, Snyder-Duch, & Braken, 2002). Given that methodologists agree that reliability coefficients of .70 or greater are generally acceptable, intercoder reliability was deemed strong and acceptable, and the remainder of the sample was coded.

Findings

To answer our research question, if the quality of online health sources targeting Hispanics is the same as the quality of sources that target the majority population, we first conducted a multivariate analysis of variance (MANOVA) test on all eight quality measure variables (authoritative, complementarity, privacy, attribution, justifiability, transparency, financial disclosure, and advertising policy) after creating mean scores for each measure variable. The results suggested that there were significant differences in the quality of online health sources between the Hispanic- and the majority-targeted sites (Wilks’ Λ $F(1, 80) = 16.6, p < .001, \eta_p^2 = .65$). Mean score of the quality measures for the majority-targeted sites ($M = 3.6, SD = .57$) was significantly higher than that of Hispanic-targeted sites ($M = 2.6, SD = .66$).

Among the eight quality measures of online health sources, the majority-targeted health sites revealed significantly higher mean scores in the authoritative (qualifications of authors indicated), privacy (whether privacy of personal data is respected), justifiability (whether claims are backed up with scientific evidence), complementarity (information provided supports the doctor-patient relationship), and advertising policy (clear distinction between editorial and advertising contents) variables (See Table 2 for mean scores). As to authoritative measure, the majority-targeted health sites ($M = 3.0, SD = .62$) revealed a significantly higher mean score than Hispanic-targeted sites ($M = 2.6, SD = .71$) ($F(1, 80) = 5.9, p < .05, \eta_p^2 = .07$). Majority targeted websites were more likely to support the doctor-patient relationship (complementarity) than Hispanic-targeted websites ($F(1, 80) = 10.2, p < .001, \eta_p^2 = .11$). Protection of privacy of personal data was more salient among the majority health sites than the Hispanic-targeted sites ($F(1, 80) = 47.4, p < .001, \eta_p^2 = .38$). The majority-targeted health sites tended to provide more justifiability measures ($F(1, 80) = 14.4, p < .001, \eta_p^2 = .154$) and display advertising policies more frequently to distinguish editorial content from advertising content than Hispanic-targeted sites ($F(1, 80) = 81.7, p < .001, \eta_p^2 = .51$).

Table 2. The Differences of the Eight Quality Measures of Online Health Sources

	Majority	Hispanic	<i>F / P</i>
	<i>M / SD</i>	<i>M / SD</i>	
Authoritative	3.0/.62	2.6/.71	5.9/.018*
Complementarity	4.8/.50	4.1/1.2	10.1/.002*
Privacy	4.7/1.0	2.1/2.1	47.4/.000**
Attribution	3.9/.72	3.6/1.3	.99/.321
Justifiability	2.4/1.7	1.2/1.1.	14.4/.000**
Transparency	4.9/.42	4.7/.6	1.2/.28
Financial Disclosure	1.9/1.5	2.3/1.1	2.0/.15
Ad Policy	3.4/2.2	.7/.4	81.7/.000**
Total	Wilks' $\Lambda F(1, 80) = 16.6, p < .000, \eta_p^2 = .65$.		

* $p < .05$ ** $p < .001$

However, there were no statistically significant differences between the majority health sites and the Hispanic-targeted sites in the attribution and transparency variables. Although the majority health sites revealed slightly higher mean scores in the two variables than the Hispanic-targeted sites, the difference was not significant (See Table 2). In other words, there were no differences between the two groups in terms of providing attributions of any sources being cited on health sites and being easily accessible. In addition, Hispanic targeted health sites ($M=2.3, SD=1.1$) were more likely to provide financial disclosure statements than the majority health sites ($M=1.9/SD=1.5$), even though the difference was not statistically different (See Table 2).

To examine the differences between the majority and Hispanic-targeted sites in more detail, MANOVA tests were again conducted for the sub-items of each quality measure. First, regarding the authoritative quality measure, the MANOVA test results for all six items (See Table 1 for the items) suggested there were significant differences between the majority- and Hispanic-targeted sites (Wilks' $\Lambda F(1, 80) = 4.99, p < .001, \eta_p^2 = .29$), indicating the majority sites contained more of authoritative quality related measures than Hispanic targeted sites. In the majority-targeted health websites ($M=2.6, SD=1.1$), medical doctors' specialties are mentioned (item 3) more often than in Hispanic-targeted websites ($M=1.7, SD=1.4$) when they provided health information ($F(1, 80) = 8.2, p < .01, \eta_p^2 = .10$). In addition, health advice provided on the websites was more often given by medical or qualified professionals (item 5, $F(1, 80) = 7.1, p < .01, \eta_p^2 = .08$) and more explanations of acronyms to degrees or affiliations (item 4, ($F(1, 80) = 15.3, p < .001, \eta_p^2 = .16$) were provided on the majority-targeted health sites than the Hispanic sites. The other three items did not reveal significant differences between the majority and Hispanic-targeted websites (See Table 1 for mean scores).

Second, as to complementarity quality measure, there were also significant differences between the majority- and Hispanic-targeted websites (Wilks' $\Lambda F(1, 80) = 5.89, p < .001, \eta_p^2 = .19$). When examining each item, there were significant differences in the items 1 (information supports but doesn't seek to replace the doctor-patient relationship) ($F(1, 80) = 15.9, p < .001, \eta_p^2 = .17$) and 2 (site's mission and intended audience provided) ($F(1, 80) = 4.2, p < .05, \eta_p^2 = .05$), but no such difference in the item 3 (mission and purpose provided for the org behind the sites) ($F(1, 80) = 1.1, p > .001, \eta_p^2 = .01$) (See Table 1 for mean scores for each item). The majority-targeted websites contained complementarity quality measure more often than the Hispanic-targeted websites.

Third, the majority-targeted health websites provided significantly more privacy information to their visitors than the Hispanic-targeted websites (Wilks' $\Lambda F(1, 80) = 24.6, p < .001, \eta_p^2 = .39$). Privacy policies (item 1) were more often available to the majority websites' visitors ($F(1, 80) = 49.0, p < .001, \eta_p^2 = .38$), and the visitors of the majority-targeted websites were also more often notified how their personal data would be used by third party or other companies (item 2) ($F(1, 80) = 44.9, p < .001, \eta_p^2 = .36$) (See Table 1 for mean scores).

Fourth, with regard to attribution quality measure, the majority-targeted websites were more likely to contain the items of attribution quality measure than the Hispanic-targeted websites (Wilks' $\Lambda F(1, 80) = 2.8, p < .05, \eta_p^2 = .10$). When examining each item difference, specific dates of medical content creation and modification (item 3) were more often provided in the majority-targeted website than in the Hispanic-targeted sites ($F(1, 80) = 5.2, p < .05, \eta_p^2 = .06$). There were no significant differences in terms of the other two items of attribution measure (See Table 1 for mean scores).

Fifth, for justifiability measure, there were significant differences between the majority and Hispanic-targeted websites (Wilks' $\Lambda F(1, 80) = 6.7, p < .001, \eta_p^2 = .21$). Health product brand names were clearly identified more often in the majority-targeted health websites ($F(1, 80) = 17.1, p < .001, \eta_p^2 = .18$), and information about alternative therapies and products were also more often included in the majority-targeted websites than in the Hispanic websites ($F(1, 80) = 19.5, p < .001, \eta_p^2 = .20$). However, there were no clear differences in terms of providing scientific evidence (e.g., medical journals) for benefits or performance of suggested treatment (claims) between the two groups ($F(1, 80) = 1.6, p > .05, \eta_p^2 = .008$) (See Table 1 for mean scores for each item).

Sixth, there were no differences in terms of transparency measures (Wilks' $\Lambda F(1, 80) = .81, p > .05, \eta_p^2 = .02$) and financial disclosure measures (Wilks' $\Lambda F(1, 80) = 2.8, p > .05, \eta_p^2 = .07$) between the majority- and Hispanic-targeted health websites. When examining each item for financial disclosure, there were significant differences in providing funding sources between the two groups (item 1, $F(1, 80) = 5.0, p < .05, \eta_p^2 = .06$). However, both of the items of transparency did not reveal any mean differences between the two groups (See Table 1 for mean scores of each item measure).

Lastly, with respect to advertising policy related items, the majority-targeted health websites were more likely to provide advertising policy (item 1) explaining differences between editorial and advertising contents, and promotional information was more easily identifiable (item 2) in the majority targeting websites than in the Hispanic targeting websites (Wilks' $\Lambda F(1, 80) = 40.6, p < .001, \eta_p^2 = .51$; item 1: $F(1, 80) = 72.1, p < .001, \eta_p^2 = .48$; item 2: $F(1, 80) = 79.4, p < .001, \eta_p^2 = .50$) (See Table 1 for mean scores of each item).

Discussion

Investigating an area that has not been researched, this study provides valuable insights into the quality of online health websites that are targeted to Hispanics. When compared to information that is targeted to the majority population, these findings imply that Hispanic-targeted websites have a lower quality of health information as was evident in five of the eight HONcode (Health on the Net Foundation, 2011) quality measures categories (authoritative, complementarily, privacy, justifiability, and ad policy). This is disconcerting as online health information is an often-used source for health information among Hispanics (Fox, 2009) that can play an integral part in reducing health disparities (Chang, et al., 2004). However, when the quality of the online health information is poor, it is less likely to assist with decreasing disparities (American Public

Health Association, 2001). This study shows that valuable opportunities to reduce disparities are currently being missed.

First, Hispanic-targeted sites were less likely to provide information from medically trained and qualified professionals. When a trained professional or medical doctor did provide the information, it was often unclear if they were trained in the area for which they were providing information. For example, was a cardiologist providing information about heart disease, or was the information coming from an allergist? To further muddy the waters, when degrees and acronyms were provided, they were not explained. This can make it difficult for a user to decipher professional medical advice from that of a non-medically qualified organization or individual. In 2006 (Fox), 75% of online health information seekers reported they do not investigate sources. Uncertainty of source and source credibility may have lent itself to the same online users stating they experienced negative emotions such as being overwhelmed (25%), frustrated (22%), confused (18%), and frightened (10%) when searching for online health information.

This study's findings also suggest that online health information targeting Hispanics is more geared toward replacing the relationship that exists between a user and their physician. Quality health information should support, not replace, these relationships (Kind, Wallace & Moon, 2008). By providing health information that alienates one's existing physicians, online health information providers may be creating a situation where users feel they have all the information necessary to make life-altering health decisions without the council of trained medical professionals. When paired with the fact that the information they are reading is often provided by non-medical professionals, this appears to be a recipe for disaster.

In addition, privacy policies were almost nonexistent on the Hispanic-targeted sites. In most cases, when data was solicited and gathered from users they were not informed their information would be stored, used in alternate forms, published, or shared with others. This is disheartening as for more than ten years the American Medical Association has urged that online health sites have an obligation to protect users' privacy and confidentiality as they are responsible for preventing "individuals' personal medical information, including patterns of use and interests, from involuntarily entering the hands of marketers, employers, and insurers" (Winker, et al., 2000, p. 1600). Those seeking health information online should be able to search for information about specific diseases and medical conditions without fear that they will be identified without their permission.

Finally, while there was no significant difference in majority- and Hispanic-targeted health sites with regards to providing scientific evidence for health claims, the Hispanic websites were less likely to clearly identify brand names and alternative therapies. This means that when specific products were suggested, they failed to offer alternative, and often less expensive and more accessible, treatments. This was compounded by the fact that Hispanic sites were less likely to distinguish between advertising and editorial content. The combined result of these shortcomings might contribute to negative search experiences (Fox, 2006), as it might be more difficult for Hispanic users to tell what is advertising, what is actual health information, and who is providing health messages.

Conclusion and Future Research

When Hispanics go online for health information, they are most likely accessing information that is of a lesser quality than members of the majority population. While the current study has identified a gap in quality, additional research investigating the reason for this gap is needed. In

addition, all the health sites in this study were coded were in English. While 44% of Hispanics adults living in the United States speak both Spanish and English (Hakimzadeh, 2007), future studies should analyze the quality of websites in Spanish. Continued and future research investigating the differences in quality of information available to Hispanics is important as health communicators address and hopefully reduce possible knowledge gap and health disparities within this group.

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