



Internet Use for Health Information among American Indians: Facilitators and Inhibitors

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Melissa K. Filippi , *University of Kansas Medical Center*, mfilippi@kumc.edu

Christina M. Pacheco , *University of Kansas Medical Center*, cpacheco@kumc.edu

Charlotte McCloskey , *University of Kansas Medical Center*, cmccloskey@kumc.edu

See next page for additional authors

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Abstract

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Keywords

American Indian; Community-based Participatory Research; Health Information; Healthcare Disparities; Internet; Qualitative Research

Cover Page Footnote

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Authors

Melissa K. Filippi, Christina M. Pacheco, Charlotte McCloskey, Rebecca Jeanne Crosthwait, Justin Begaye, JB Kinlacheeny, Won S. Choi, K Allen Greiner, and Christine M. Daley



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School of Community Health Sciences
University of Nevada, Las Vegas

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Melissa K. Filippi, University of Kansas Medical Center
Christina M. Pacheco, University of Kansas Medical Center
Charlotte McCloskey, University of Kansas Medical Center
Rebecca J. Crosthwait, University of Kansas
Justin Begaye, University of Kansas Medical Center
JB Kinlacheeny, Center for American Indian Community Health
Won S. Choi, University of Kansas Medical Center
K. Allen Greiner, University of Kansas Medical Center
Christine M. Daley, University of Kansas Medical Center

ABSTRACT

Our research team explored Internet use among a heterogeneous American Indian (AI) population to determine Internet use in relation to health information seeking behaviors. Participants examined an AI culturally-tailored tobacco website as an example to explain what they wanted in an AI Internet health site. Using community-based participatory research, we conducted 10 focus groups with non-college AI men and women (N=96), stratified by age (18-29, 30-49, and 50 and over) to better understand their perceptions of Internet use and health information needs. We found that Internet use varied greatly among all strata. Participants referenced WebMD[®] more than any other website, but participants were not pleased with the design and navigation. When examining the sample website, participants across strata stressed that recreational and traditional tobacco use should be discussed. Participants in all strata desired a simple website design with easy to read text accompanied by images. In order to gain and maintain cultural respect, participants stated that web designers should be aware that some images hold cultural meaning, particularly tobacco. Baseline data are needed for AI's use of the Internet to obtain health information; this research is helpful to address health inequalities among AI, particularly access to web-based health information.

Keywords: American Indian, community-based participatory research, health information, healthcare disparities, Internet, qualitative research

INTRODUCTION

The social interactions, information and technology with which individuals come into contact on a daily basis shape their ideas about health and the behaviors they act upon (U.S. Department of Health and Human Services, 2013). Advances in science and health have many people pursuing additional sources of health information to meet their needs and to fill information gaps (U.S. Department of Health and Human Services Office of Disease Prevention and Health Promotion, 2010). Many studies have shown that disparities in access to health information and technology can result in limited use of preventive services, increased trips to the emergency room and poorer overall health status (Berkman, 2011). One goal of Healthy People 2020 is to, “use health communication and health information technology to improve population health outcomes and health care quality, and to achieve health equity” (U.S. Department of Health and Human Services, 2013). With the increase in online health information, it is important for health professionals to be aware of what health information their patients are accessing and how they are accessing that information.

Significant differences in access to health information on the Internet exist among minority racial/ethnic groups (Smylie, Williams, & Cooper, 2006; Weaver et al., 2009; Zanchetta & Poureslami, 2006). For instance, when looking at the likelihood of using the Internet to search for health information among racial/ethnic groups, substantial gaps were revealed between Hispanics and whites and African-Americans and whites (Lorence, Park, & Fox, 2006). A recent study reporting on racial/ethnic variation in Internet use among people living in rural areas found that 72.8% of whites, 51.5% of African-Americans, and 38.0% of Hispanics have used the Internet in the past six months (Wang, Bennett, & Probst, 2011). In addition, inequalities exist among racial/ethnic groups for online health information seeking behaviors (Geana et al., 2012; Weaver et al., 2009), with 58% of Hispanics using the Internet for health information searches compared to 69% of whites (Lorence et al., 2006).

Little research has been conducted among American Indians (AI) to determine Internet use and health information needs. It has been reported that AI populations in rural areas have less access to telephone lines than other racial/ethnic groups, and those living on reservations may lack access to basic and advanced technologies because of poor technological infrastructure (Bissell, 2004; Brescia & Daily, 2007; Morris & Meinrath, 2009). Projects are underway to improve technical infrastructure for telephone and Internet services on reservations and in rural areas serving AI populations (Wood et al., 2003). However, much work still exists (Morris & Meinrath, 2009; Office, 2006). This situation is pressing for AI trying to access information and also for tribes who want better communication with their sometimes dispersed members (Rodgers & Veil, 2008). In addition, much of the research ignores heterogeneous urban AI populations and does not address Internet access and online health information seeking behaviors among these groups. As access gaps decrease for the general population, primarily due to less expensive technology and greater availability, researchers have shifted their focus to look at “other dimensions of communication inequality,” (Kontos, Bennett, & Viswanath, 2007) e.g., improving Internet skills and website design for varying audiences (Kontos et al., 2007). Choices, styles, readability, and organization of websites are categories that need to be addressed because deficiencies in these elements may impede constructive navigation (Kontos et al., 2007; Viswanath, 2005). Health researchers will need to merge socially-based education initiatives and content-driven computer literacy to improve access, especially for AI and other underserved populations.

Although few studies have focused on barriers and facilitators to computer and Internet use among AI, our own self-administered survey, given to a diverse sample of AI in the Great Plains (N=998), revealed that generational differences existed with regards to Internet use for seeking health information (Geana et al., 2012). Additionally, participants expressed a perceived lack of culturally sensitive websites that provide health information. This manuscript focuses on the narratives of community members concerning their Internet use in relation to health information seeking behaviors. The qualitative data enhances our understanding of Internet use and Internet-based health information among this underserved population. This research is important because AI suffer from some of the worst health disparities of any other racial/ethnic group (Bissell, 2004; Robertson, Kattelmann, & Ren, 2007). Here we report needs and suggestions from AI for improvements in access and use of the Internet by heterogeneous AI populations.

METHODS

To understand facilitators and barriers to accessing Internet health resources among AI in Kansas and Missouri, we conducted a series of 24 focus groups with 204 participants. To gain more concrete suggestions on website design, participants were also shown a model culturally tailored Internet site for AI about smoking and lung health (www.anbl.org). This website was selected because we have a culturally-tailored smoking cessation program (C. Daley, Greiner, et al., 2010) that features an accompanying website that was readily accessible to us and we knew it would not be changed during the study. We stratified the sample by age (18-29, 30-49, 50+), gender (male, female), and college status (currently attending college, not currently attending college). Because college students have particular access to and relationships with technology and the Internet, it was deemed appropriate and necessary to separate current college students from other participants. These results are reported elsewhere (Filippi et al., 2012). For this paper, we report on the non-college strata (N=96 participants, 10 focus groups) only, i.e., those individuals not currently enrolled in a college program. For recruitment, we used Native-specific listservs, posters, flyers, information booths at pow wows, and direct recruitment through our regional community advisory board (CAB). We used a variety of methods to solicit both Internet users and nonusers. All study protocols were approved by the University of Kansas Medical Center's Human Subjects Committee and local tribal councils, as needed.

The focus group moderator's guide (Table 1) was developed in conjunction with our CAB and other community partners. Researchers and community members partnered to draft moderator's guides, based on data gained from our previous behavioral interventions and surveys conducted on Internet use (Choi et al., 2006; C. Daley, Cowan, Nollen, Greiner, & Choi, 2009; C. Daley, Greiner, et al., 2010; C. Daley, James, et al., 2010).

Table 1: Focus Group Moderator's Guide

General Internet Use <ol style="list-style-type: none">1. Do you use the Internet for anything? What do you use it for?2. How often do you use it?3. How do you access it?
Health Information on the Internet <ol style="list-style-type: none">4. Have you ever used the Internet to look for health information? What information?5. What sites have you used? Tell me about anything you have liked/not liked about the sites you've gone to for health information and why.

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6. How easy has it been to find health information that is respectful of your culture? 7. Do you think the health information is respectful of different Native cultures? 8. What would you change to make the information more respectful? 9. Is there anything that you would change on the health information sites to make them more useful to you?
Tobacco Information 10. What would you like to see in a site about tobacco use? 11. What would you like to see about general lung health? 12. What should we definitely NOT say or talk about on such a site?
Internet Site 13. What kind of pictures do you want to see? What pictures wouldn't be appropriate? 14. Are there any colors that you think would be more appropriate? 15. Do you like to see graphs or tables with information or would you rather see text? 16. What things would make it easier to find information on the site?
Barriers 17. Name anything that might make it hard for someone to use the Internet. 18. Do you think any of these problems are more common for Native people? 19. Now I want to go through the list and rank them from biggest problem to smallest problem for Native people. Remember, this is for everyone, not just you. 20. Would this list change if it were just about using the Internet for health information? <i>Note: Question order, wording, and follow-up changed based on group discussion.</i>

Focus group moderators were matched to the focus groups by gender, age and race/ethnicity. Focus groups were held in urban and reservation areas and were conducted during days and evenings to accommodate participants' work schedules. Prior to each group, participants completed written informed consent documents and a brief demographic survey. Focus groups followed a semi-structured format, using open-ended questions with follow-up questions and prompts as needed. Groups lasted between 60 and 90 minutes and were digitally recorded and transcribed verbatim. Sessions were concluded after data saturation was achieved on major themes. Assessment of saturation was done through research team meetings where content of focus groups was discussed based on notes taken from both the moderator and assistant moderator. These were held after every 2-3 focus groups were conducted. Question wording and some follow-up questions were modified based on these discussions, but the primary topic areas and the majority of questions remained the same.

The analysis was jointly conducted by academic researchers and community members. Using team ethnography, i.e., a deliberate collaboration among researchers and/or partners, and the principles of community-based participatory research (CBPR) (Bernard, 2006; C. Daley, Greiner, et al., 2010; Erikson & Stull, 1998; Israel et al., 2005), researchers and community members worked together to gain insights and interpretations from both points of view. Coding followed a CBPR protocol developed by the team in a previous study, described fully elsewhere (C. Daley, Greiner, et al., 2010; C. Daley, James, et al., 2010). The transcripts were coded by hand by three members of the research team using a codebook. The coders were a non-AI researcher who had not conducted the focus groups and two AI community members. The two AI community members were from the communities where the groups took place and these two individuals participated in conducting the focus groups. By including these individuals, we maintained both the emic and etic (outsider) perspective in coding and included community

members in the analysis process, as well as the data collection process. Codebooks were developed inductively from the focus group recordings and transcripts. Approximately 10% of the codes were cross-checked by the principal investigator (CMD) to ensure inter-coder reliability; few to no differences were found. Coders identified preliminary themes which were then combined into thematic statements by the PI and checked by a community member. All exemplary quotes were identified by community members to ensure fair representation of the culture. Details of the analytic process used have been previously published (C. Daley, James, et al., 2010).

RESULTS

We conducted 10 focus groups with AI men and women not currently attending college; demographic information is summarized in Table 2. Forty-three percent of the age 18-29 stratum had attended some college and 19% had a college degree. Comparatively, the 30-49 years old stratum had a higher percentage of college graduates (34%) and less who had attended some college (31%). The age 50 and over stratum was similar to the age 30-49 years old stratum with 37% of participants having graduated college and 28% having attended some college. This is significant because education level has been shown to affect literacy levels (Kutner, Greenberg, Jin, & Paulsen, 2006). The table also highlights the difference in health care use among the three strata.

Table 2: Demographic Characteristics for AI Not Enrolled in College (N=96)

Focus Group Stratum					
<i>Aged 18-29 (n=28; 12 Male, 16 Female)</i>		<i>Aged 30-49 (n=32; 11 Male, 21 Female)</i>		<i>Aged 50 or Older (n=32; 12 Male, 20 Female)</i>	
Marital Status					
Married	10 (36%)	Married	18 (56%)	Married	21 (66%)
Never Married	16 (57%)	Never Married	8 (25%)	Never Married	0 (0%)
Other	2 (7%)	Other	6 (19%)	Other	11 (34%)
Education					
High School	11 (39%)	High School	11 (35%)	High School	11 (34%)
Some College	12 (43%)	Some College	10 (31%)	Some College	9 (28%)
College Degree	5 (19%)	College Degree	11 (34%)	College Degree	12 (37%)
Children					
Yes	12 (43%)	Yes	24 (75%)	Yes	30 (94%)
No	16 (57%)	No	8 (25%)	No	2 (6%)
Where do you get most of your health care?					
IHS	12 (50%)	IHS	13 (46%)	HIS	8 (27%)
Tribal Clinic	11 (46%)	Tribal Clinic	10 (36%)	Tribal Clinic	8 (27%)
Other	1 (4%)	Other	5 (18%)	Other	14 (47%)
What type of health care provider do you see most of the time?					
Doctor	20 (87%)	Doctor	26 (84%)	Doctor	30 (94%)
Physician's	1 (4%)	Physician's	1 (3%)		

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Assistant		Assistant			
Traditional Healer	1 (4%)	Nurse Practitioner	3 (10%)		
Other	1 (4%)	Other	1 (3%)		
Do you see the same provider most of the time?					
Yes	21 (75%)	Yes	24 (77%)	Yes	29 (91%)
No	7 (25%)	No	8 (23%)	No	3 (9%)

The results of the focus groups can be delineated into five main topics: computer and Internet use (including barriers and facilitators), Internet use for health purposes, website design, cultural respect toward AI populations, and views toward representations of tobacco (these were expressed when viewing the model culturally tailored website). While many of these themes (Table 3) were similar across age strata, there were some notable differences regarding the salience of computers and the Internet in participants' daily lives.

Table 3: Comparison and Contrast of Themes among Three Age Strata

Topic	Theme 18-29 years (N=30)	Theme 30-49 years (N=29)	Theme 50+ years (N=36)
Computer and Internet Use	<ul style="list-style-type: none"> • Daily Internet use • Used primarily for communication and social networking • Accessed from cell phones, home, and areas with free WiFi • Barriers to Internet use: lack of Internet access or a computer, lack of money. • People living on reservations or in rural areas have poorer Internet connectivity compared to living in urban areas • Computer illiteracy a barrier, particularly among elders 	<ul style="list-style-type: none"> • Varied Internet use (hourly to daily to weekly) • Used for email, research, communication, news, banking, shopping, and travel arrangements • Accessed from cell phones, home, work, and areas with free WiFi • Barriers to Internet use: lack of money, not having the Internet at home, and computer illiteracy • People living on reservations or in rural areas have limited access 	<ul style="list-style-type: none"> • Varied Internet use (daily to not at all) • Used for banking, work, health information, and filling prescriptions • Barriers to Internet use: lack of computer access, lack of time, money, computer illiteracy, frustration, and poor eyesight
Internet Use for Health Purposes	<ul style="list-style-type: none"> • Looked for health information primarily through 	<ul style="list-style-type: none"> • Used the Internet to research diabetes, cancer, mental health, 	<ul style="list-style-type: none"> • Believed a health website targeted to Native people

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	<p>WebMD</p> <ul style="list-style-type: none"> • Searched for children’s health concerns, work-related conditions, diabetes, and women’s health concerns 	<p>pregnancy, and other health concerns</p> <ul style="list-style-type: none"> • Believed that not all medical information on the Internet is accurate 	<p>should be: directed at younger people, have all medical terms defined, provide in-depth information that is easy to access, and should have audio readers available</p> <ul style="list-style-type: none"> • Concerned that not all health information on the Internet is reliable or accurate • Viewed WebMD as a thorough and comprehensive website, but frustrated with excess information on it
Website Design and Respect		<ul style="list-style-type: none"> • Preferred websites with simple graphs, charts, and bullet point text 	<ul style="list-style-type: none"> • Preferred websites with large print, simple text, easy navigation, bullet points, pictures, tables, and graphs
Cultural Respect	<ul style="list-style-type: none"> • Believed respect for tradition to be an important aspect of web design; however, they did not agree on the appropriateness, e.g., using tribal colors on a website 	<ul style="list-style-type: none"> • Believed images such as sweat lodges and peyote ceremonies should not be used on websites because they are offensive to some Native people • Suggested using pictures of children and elders on a website to show respect and learning in Native culture 	
Views toward Representations of Tobacco	<ul style="list-style-type: none"> • Believed that graphic pictures are necessary on a health website, but that the user should be forewarned about them 	<ul style="list-style-type: none"> • Believed that graphic images to show the effects of tobacco should be used on a website, but images glamorizing tobacco should not be used 	<ul style="list-style-type: none"> • Believed information on a tobacco-specific website should have information about both smoking and second-hand smoke, images of the effects of

			<p>smoking on lungs, and personal stories</p> <ul style="list-style-type: none"> • Not all participants used tobacco for traditional purposes, but all recognized differences between commercial and traditional tobacco, as well as the diversity of tobacco use among different Native peoples
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Computer and Internet Use

Across strata, focus group participants reported using computers and the Internet often. Participants aged 18-29 reported using the Internet daily for a variety of uses, primarily communication and social networking. Participants aged 30-49 also claimed to access the Internet often; however, this stratum is characterized by having a broader frequency of use. They used the Internet for an assortment of reasons, less typified by communication and social networking, but more for work and day-to-day life tasks, such as research, banking, shopping and travel arrangements. Participants aged 50 and older had the broadest range of frequency, ranging from daily use to never using the Internet. Those who did use the Internet in this age group primarily did so for work, day-to-day tasks such as banking, and health information access.

Participants in the two younger strata mentioned accessing the Internet at a variety of places, including locations where there is free Wi-Fi (such as fast food restaurants), libraries, home, and on their cellular phones. Participants in the oldest stratum did not discuss in any detail locations where they access the internet.

Across the strata, barriers to computer use and Internet access were generally the same. Participants in all strata listed the primary barriers as: 1) absence of a computer in the home/no access to a computer; 2) lack of economic means to buy a computer or update a computer; 3) computer illiteracy; and 4) living on a reservation with limited technological infrastructure. Statements such as,

“I think economics, in general, is a barrier to a lot of Native people living on or off the reservation. Not everyone can afford to have a computer,” and, “Not many people on my reservation have the means to travel to the library or a place where there’s a computer. They just listen to the radio to get news and stuff,”

exemplified some of the access issues AI confront. Participants who were 50 years and older also mentioned frustration with technology and issues with eyesight were barriers that either they or others in their age bracket experience.

Internet Use for Health Purposes

In general, most focus group participants had used the Internet for seeking health information. The primary site mentioned for this use was WebMD[®]. While participants in all strata mentioned WebMD[®], those in the 50 and older age group noted frustration with the

excessive amount of information on this site. Generally, participants in the 30-49 and the 50 and older age strata claimed they were suspicious of health information on the Internet and questioned its accuracy.

“I believe WebMD[®] [has limits]. If you inquire on alternative medicine you will get something, but you know what they know.... They’re respectful to the limits of what they know, but they don’t always have the knowledge.”

Participants in the youngest group did not mention doubting the accuracy of Internet health information. Participants in all groups stated that they have used the Internet to search for information regarding health concerns. The topics searched varied among the strata and included: women’s health (particularly pregnancy), children’s health, diabetes, cancer, mental health, and work-related illnesses.

Website Design

Simplicity is by far the most salient design feature that focus group participants mentioned when asked what they look for in a website. They distinguished their preference for simple rather than flashy and confusing websites. Participants from all strata preferred a clear and simple design. Participants aged 18-29 favored ease of navigation and mentioned the importance of using images and graphs rather than large blocks of text. The oldest group (age 50 and over) also stated that they liked pictures and graphs. Participants in all groups thought that the use of graphic images was important. For example, after looking at the sample culturally tailored website, one participant said,

“I would like to see more graphic pictures of people with bad lungs that have smoked their whole life.”

Other participants wanted to incorporate practical experiences that impacted their own lives,

“I think there needs to be a picture of what unhealthy lungs look like. I’ve touched and held a smoker’s lung and it is not beautiful.”

The 18-29-year-old participants noted that a disclaimer or warning should be given if including graphic images. Participants in the 50 and over stratum noted that large print should be used, as eyesight is a barrier to using websites. Participants in the other two strata focused on the importance of not glamorizing tobacco and tobacco use, as is often done in advertising aimed at young people.

Cultural Respect

Every group discussed the importance of websites being respectful of traditions and tribal differences among AI communities. Participants in the 30-49-year-old stratum believed that some images should not be included, such as those of particular ceremonies and rituals. Participants stated that the use of those images would be disrespectful toward the AI tribe involved,

“Well, I think any kind of ceremony would be inappropriate to have on any website because you’re not supposed to even be taking pictures.”

Participants in several groups noted that the information included in a website should be directed toward specific age groups. Participants in the 50 and over stratum especially believed that the websites should be directed toward young people, claiming that they had lived their lives already and young people should have a chance to better inform themselves to make their lives better.

“I would want it directed toward the young people as far as staying off of that kind of stuff (cigarettes) and make them understand that a lot of this stuff is man-made and it is not good for your health. The young ones need to know this.”

Similarly, participants aged 30-49 noted that images of elders and children on the website would be important to show an understanding that AI place importance and respect on the wisdom of elders and the hope for the future in children.

Model Culturally Tailored Tobacco Website for AI

We asked participants to review a model culturally tailored website that focused on tobacco use/smoking and lung health to give participants something concrete on which to comment rather than keeping the discussion abstract. We chose this website because we have a culturally tailored smoking cessation program (C. Daley, Greiner, et al., 2010) that features an accompanying website and because tobacco has a sacred meaning for some, but not all, AI groups (C. Daley, James, et al., 2010; C. M. Daley et al., 2006). The model website gave participants the ability to talk about web design while also talking about cultural beliefs. It also allowed them to talk about problems associated with the representation of the heterogeneity of AI cultures. Participants generally agreed that there are different ways that particular tribes use tobacco, including not always smoking it. It was agreed across all strata that there are good and bad uses of tobacco. The 30-49 year olds and people in the 50 and over strata particularly noted these differences, maintaining that the use of commercial tobacco is much different from traditional tobacco use.

“Not all tobacco is bad and it depends heavily on how you use it. Some use it to pray, some use it for offerings. Depends on the tribal region.”

Yet, the depiction of tobacco on a website needs to be sincere in its message. Another person stated,

“I do not want to see stereotypical uses of tobacco relating to Native Americans on a website. That upsets me.” Participants explained that the heterogeneous nature of tobacco use needs to be represented.

In terms of commercial tobacco, participants agreed that success stories from other AI who have quit smoking should be used as motivation.

“I draw inspiration from reading someone’s success story about quitting... it makes me feel like I can do it too.”

Overall, participants believed that both traditional and commercial tobacco should be present on websites discussing smoking cessation. Based on participants’ feedback, a site such as this one must include both health information and traditional views throughout; the two concepts should be weaved together rather than segregated to different parts of the site.

DISCUSSION

Our results indicate that slight differences exist among the three age cohorts. No strong contrast of responses was present; rather subtle, nuanced variations were evident. We can infer from these discussions that general computer and Internet use among AI are similar to those observed in other populations. For example, recent research surrounding Internet use for health information and website design suggests comparable attitudes in non-AI populations (Kontos et al., 2007; Ye, 2010; Zulman, Kirch, Zheng, & An, 2011). Barriers affecting AI populations are similar to those affecting access for other ethnic groups. Socioeconomic factors are a major concern among all underserved and minority populations. In addition, younger AI reported using the Internet on a frequent basis for basic research, information gathering, and social networking. Similar Internet behaviors are found among other populations in older age groups

(Taha, Sharit, & Czaja, 2009; Xie, 2009; Ybarra & Suman, 2008). Additionally, all age strata desire a simple website design with easy to read text accompanied with charts, graphs, pictures, and short video clips. Other populations feel the same way about the presentation of a website (Gilmour, 2007; Kerr et al., 2008; Quintana, Feightner, Wathen, Sangster, & Marshall, 2001; Yardley, Morrison, Andreou, Joseph, & Little, 2010).

Even though similarities exist among AI populations and other ethnic groups, two differences stand out. The first difference was seen in regards to the model website; AI attitudes about tobacco are different from other racial/ethnic groups due to the sacred nature of the plant for many AI. Some AI tribes have a specific history with tobacco, where it is often used for spiritual or ceremonial purposes (C. M. Daley et al., 2006). However, there is variation within groups in terms of how and why tobacco is used, including for prayer, for medicine, as a gift, etc. Cultural differences such as this should be distinguished when designing health-related websites. For instance, when discussing quitting smoking, which has many health benefits, it is important to recognize the sacred nature of the plant. When creating a website about quitting smoking, both uses of tobacco must be addressed and there needs to be a clear distinction between sacred tobacco use and recreational tobacco abuse. We did this based on information from our participants by talking about traditional tobacco and the different health issues surrounding recreational smoking on the same website. The model website, www.anbl.org, has an entire section on traditional use, as well as videos describing its use, different words for tobacco in different AI languages, and a description of how the All Nations Breath of Life smoking cessation program respects sacred tobacco. In addition, it covers basic information about the different health problems associated with recreational smoking.

A similar format can be used for any website addressing health issues among AI because cultural and spiritual beliefs surround many health issues and can be interwoven into a website. The model culturally tailored website about smoking and health provide a clear example of how to incorporate culture and health.

The second difference among AI populations and other racial/ethnic groups that has not been discussed widely in research is the heterogeneity of AI culture. Participants felt that to gain or maintain respect, web designers should use caution when deciding which images to use due to the cultural/spiritual meanings that may be associated with them. This is especially important if the image represents one particular tribe. Some participants suggested that websites should use various color schemes, the medicine wheel, the four directions, or other AI imagery, whereas others voiced opposition to those same symbols. Although not stated, perhaps the opposition to the use of those images comes from the fear of the images being used out of context resulting in a misrepresentation of AI culture. Therefore, a website may not be an appropriate venue to host some images. Concerns may also surround using traditional beliefs of one tribe to represent views of the multitude of AI cultures, not respecting the heterogeneity of the cultures. With tobacco, this is clear because not all tribes used or use tobacco in ceremony or for other traditional purposes. Respect of the heterogeneity of traditional and spiritual use of tobacco was paramount when we created www.anbl.org. This should be true for any website that is tailored for AI; the culture of one tribe cannot be used to explain the cultures or beliefs about health and wellness of other tribes. The issue of respect is important to all populations; however, respecting the heterogeneity of culture has not been clearly expressed among other groups with respect to web design. This is essential because people use general health websites, e.g., WebMD[®], but AI participants in our focus groups felt that these generic health sites are insufficient for AI.

There are some limitations to our findings. Focus groups were conducted in the Midwest among a finite number of tribes (a total of 32 tribal affiliations were given). Therefore, information is not transferable to all AI communities and websites designed based on information from our results may not be appropriate to all AI. However, we were able to capture viewpoints from AI residing in rural, urban, and reservation areas as well as from a variety of age groups. The information we received focused on respecting heterogeneity, including heterogeneity apart from the tribes represented in our groups. We are hopeful that this information will be useful for the design of health websites for AI. In addition, not all themes from our groups were saturated. We focused only on major themes in which we were interested based on our moderator's guide; other information came up in the groups for which we were not specifically searching.

Although not directly related to website design, additional research is needed to further understand tobacco use among multiple tribes. We have begun this process (C. Daley et al., 2009; C. Daley, Greiner, et al., 2010; C. Daley, James, et al., 2010; C. M. Daley et al., 2006). Despite limitations, the research lends itself to future applied research possibilities. The information gathered will be used to enhance several culturally-tailored websites, including the model culturally-tailored tobacco website that was presented to focus group participants and several others that are currently under development, including websites focused on weight loss, ethnic identity, environmental health, and others. The data on Internet use and the intersection of health knowledge and technology accompanied with suggestions on website design will aid with website development for health programs aimed at working with AI. More research is needed to better understand the effects of Internet based health information on AI health outcomes and health disparities.

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