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Internet Access and Online Cancer Information Seeking Among Latino Immigrants From Safety Net Clinics

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Abstract

Internet use is widespread, but little is known about Internet use for cancer information among Latinos, especially those who rely on safety net clinics. The authors investigated access to and intended use of the Internet for cancer information among low income, immigrant Latinos predominately from Central and South America. A cross-sectional study of 1,273 Latinos 21 years and older attending safety net clinics or health fairs was conducted from June 2007 to November 2008. The authors used logistic regression models to evaluate associations of age, acculturation, psychosocial factors and other covariates with Internet access and intended use of the Internet for cancer information among those with access. Of the sample, 44% reported Internet access. Higher information self-efficacy and greater trust in the Internet were independently associated with Internet access ($p = .05$ and $p < .001$, respectively). Among those with access, 53.8% reported they intended to seek cancer help online if they needed information. Those with younger age and higher acculturation, education and self-efficacy had higher odds of intended Internet use for cancer information, considering covariates. In addition, those with high (vs. low) perceived risk of cancer ($OR = 1.76$; 95% CI [1.14, 2.73]; $p = .01$) and higher levels of trust in online health information ($OR = 1.47$ per one-point increase; 95% CI [1.19, 1.82]; $p = .0004$) were more likely to intend to seek cancer information online. These findings that Internet access is fairly high in the immigrant Latino population and that the Internet is a trusted source of cancer information suggest that the Internet may be a channel for cancer control interventions.

Growing numbers of Americans are using the Internet to seek health information (Baker, Wagner, Singer, & Bundorf, 2003; Mandl, Feit, Pena, & Kohane, 2000; Shuyler & Knight,

2003). However, Internet use is not evenly distributed among the population (Howard, Rainie, & Jones, 2001; Pena-Purcell, 2008). This health information digital divide has been especially pronounced for Latinos (Calvert, Rideout, Woolard, Barr, & Strouse, 2005; Hesse et al., 2005; Mandl et al., 2000; Pena-Purcell, 2008).

Among Latinos who have participated in telephone surveys, facility with the English language, younger age, and higher health literacy have all been associated with Internet access (Hesse, Moser, Rutten, & Kreps, 2006; Livingstone, Parker, & Fox, 2009). However, the majority of this research has been conducted among Mexican Americans (Gordon & Iribarren, 2008), and we know little about other psychosocial factors related to Internet access or about access among other, more newly immigrated Latino groups. The largest group of recent U.S. immigrants are those from Central and South America (Pew Hispanic Center, 2009, 2010). This group is unique in having higher rates of being uninsured (60%) than Latino permanent residents (28%); 41% rely on safety net clinics (clinics that provide care regardless of ability to pay; Livingstone, 2009). Thus, safety net clinics are an important setting for assessing how to improve access to health information for this group.

We present results from a large cross-sectional survey of predominately Central and South American Latinos from safety net clinics about their health information channels. We describe Internet access and determine psychosocial and other factors associated with intended use of the Internet for cancer-related health information. The results are intended to inform future Internet-based interventions designed to change behavior and/or disseminate cancer-related information to the growing U.S. Latino population, especially those cared for in limited resource settings.

Materials and Methods

This study was conducted in the Washington, D.C., metropolitan area by the National Cancer Institute-funded Latin American Cancer Research Coalition. The study was approved by the Georgetown University Medical Center Institutional Review Board.

Setting and Population

The study was conducted in nine Latino-serving safety net clinics. We recruited a cross-sectional age- and gender-stratified quota sample of individuals attending the clinics between June 2007 and November 2008. Age categories were 21–29, 30–39, 40–54, and 55+ years. We used this sampling frame to assess cancer screening in other portions of the study. Eligible participants were clinic users or individuals accompanying a registered patient, self-identified as Latino, and ≥ 21 years old. We excluded women enrolled in the Women Infants and Children program since this group attended to receive services/food allowances for their children. We also enrolled Latinos attending health fairs sponsored by the clinics (4% of the sample). We obtained informed consent (in Spanish or English); each participant received a \$10 gift card for his or her time.

A total of 1,482 eligible individuals were enrolled; approximately 90% of those approached agreed to participate. We were not allowed to collect data on nonparticipants. We excluded those with missing country of origin, those from the Caribbean, and those who were not from Latin America ($n = 131$) to limit our focus to the most populous groups in the sample: South (63%), Central (27%), and North (10%) American Latinos. We also excluded those with unknown Internet access ($n = 78$) rather than assuming they did not have access to have a conservative estimate of use. After these post-hoc exclusions, we report on an analytic sample of 1,273 participants.

Data Collection

We developed a survey entitled, “Su Voz, Su Salud” (“Your Voice, Your Health”). Some Health Information National Trends Survey measures were adapted so that results could be compared (Nelson et al., 2004). Trained bicultural and bilingual coordinators conducted face-to-face structured interviews using direct computer data entry. Interviews took place in a private location and lasted about 30 min; 99% were completed in Spanish.

Variables

Outcome Measures—Our primary dependent variable was Internet access (yes vs. no). We also queried whether participants used assistance to gather information from the Internet (yes vs. no), where access occurred (home, office, library, or school), preferred language of websites (English, Spanish, or both), type of connection (modem, cable, and FIOS or DSL) and the frequency of use. Last, we asked participants where they would look for information if they had a question about cancer to ascertain intended use of the Internet for cancer information (yes vs. no).

Independent Variables—We measured psychosocial and demographic factors that might be associated with Internet access and intended use for cancer information. Psychosocial factors included information self-efficacy, trust in information, and perceived risk of and worry about cancer. The Cancer Behavior Inventory’s seeking and understanding medical information subscale was used to measure self-efficacy (Merluzzi & Martinez Sanchez, 1997). Participants were asked to report on a 9-point scale ranging from 1 (*not at all confident*) to 9 (*totally confident*), their response to phrases such as “How confident are you that you can ask nurses questions about cancer?”

Trust in health information obtained on the Internet was ascertained using a 5-point Likert scale response ranging from 1 (*not at all*) to 5 (*always*) to the following question: “How much would you trust information about health and medical topics that you receive from the Internet?”

We used the following question to measure risk perceptions: “In your opinion, how likely is it that you will develop cancer?” with possible responses ranging from “not at all likely” to “definitely.” Worry about getting cancer was asked as follows: “In the past month, how often have you worried about your own chances of getting cancer?” Responses ranged from “not at all or rarely” to “a lot.”

Demographic variables included age, gender, marital status, level of education, and country of origin. Acculturation was measured based on language acculturation; higher scores indicated higher levels of acculturation. (Marin, Sabogal, VanOss Marin, Otero-Sabogal, & Perez-Stable, 1987).

Data Analysis

We evaluated bivariate associations using chi-square tests for categorical variables and *t* tests for continuous variables. The associations between the continuous variables and each outcome were examined to determine whether a categorical representation was more appropriate. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were estimated using logistic regression models. Variable selection for the multivariable models was based on the statistical significance of bivariate associations; *p* values .05 were considered for inclusion. Gender and country of origin/region were included in all models to capture potential unmeasured confounding. We assessed model fit using the Hosmer-Lemeshow goodness-of-fit test. All analyses were conducted using SAS 9.2.

Results

This predominately Central and South American Latino group was comprised of mostly recent immigrants (median years lived in the United States = 8). The majority were from El Salvador (43%), followed by Guatemala (13%) and Bolivia (10%). In this population, 44% reported access to the Internet (Table 1). Among those with Internet access, 76% reported that they relied on a family member or friend for help accessing health information. Home computers were used by 89%. In addition, more than one-third (37%) used libraries and 24% used work computers for Internet access (sources not mutually exclusive). It is noteworthy that 79% reported having high-speed connections (e.g., FIOS, cable); 52% reported using the Internet one or more times per day and 16% used it 3–5 days per week. It is surprising that although 99% of the sample completed the survey in Spanish, 44% reported using English or English and Spanish websites. Among those with Internet access, 53.8% reported that they intended to use the Internet to seek cancer information if they had a need for this information (Table 2).

Two psychosocial factors were independently associated with having Internet access (Table 3). For each one-unit increase in trust in online health information, the odds of having Internet access increased by 68% (OR = 1.68, 95% CI [1.51, 1.22], $p = .001$), controlling for other factors. Higher information self-efficacy was also associated with having Internet access, with a 10% increase in the odds of having access for each one-unit increase in self-efficacy (OR = 1.10, 95% CI [1.01, 1.88], $p = .05$). Several demographic factors were also independently associated with having Internet access, including higher education, younger age (younger than 50 years vs. older than 50 years: OR = 1.74, 95% CI [1.24, 2.45]; $p = .002$); female vs. male gender (OR = 1.45, 95% CI [1.08, 1.95]; $p = .01$) and higher language acculturation (see Table 2).

Psychosocial factors were important correlates of intent to seek cancer information online (Table 3). For example, those who reported high perceived risk of developing cancer were 1.76 times (95% CI [1.14, 2.73], $p = .01$) more likely to seek cancer information online than those with low perceived cancer risk, controlling for covariates. Higher self-efficacy in obtaining health information, greater trust in the Internet as an information source, younger age, and greater acculturation were also significantly associated with intended use of the Internet as a source for cancer information. In addition, there was an increase in the odds of seeking cancer information online as education level increased (OR = 2.24, 95% CI [1.27, 3.93] for high school vs. less than high school and OR = 3.22, 95% CI [1.79, 5.80] for more than high school vs. less than 12 years).

Discussion

This is one of the first studies that we are aware of describing Internet use in a predominately Central and South American immigrant population using safety net community clinics. We found that Internet access was fairly common, with 44% having online access, and more than half stating they would use the Internet for cancer information, although most had family or friends assist them in using the Internet. Several psychosocial factors were associated with Internet access and intended use for cancer information when needed, including information self-efficacy, trust in the Internet as a source of health information, and perceived risk of cancer. In addition, expected demographic factors such as younger age, higher education and greater acculturation were also related to access and intended use of the Internet for cancer information. It is interesting that women reported greater Internet access than did men.

Lower rates of Internet use have been reported historically among Latinos compared to whites. While these differences persist to the present (Miller, West, & Wasserman, 2007; Pew Hispanic Center, 2010) recent rates of increase in Internet use have actually been greater for Latino than white adults. Overall, 64% of U.S. Latinos have Internet access, including 77% of US-born Latinos and 52% of foreign-born Latinos (Livingstone et al., 2009; Pew Research Center, 2010). Thus, the 44% rate of Internet access in our safety net clinic immigrant population is below that of U.S. Latinos overall. This result suggests an “immigrant digital divide.” Rates from our study may be lower than those observed for national groups of Latino immigrants because we sampled from safety net clinics that care for the lowest income groups. It is also possible that other surveys may have been more heavily weighted toward Latinos of Mexican descent, while our sample was predominately from Central and South America (90%). Variations in cultural beliefs, social class or acculturation may explain these between-group differences. Regardless, because safety net care is becoming an increasing source of care among the growing uninsured Latino population (Livingstone, 2009), this group may also be at risk for being under-served for health information.

The type of Internet access reported in our sample (largely home, high speed) is similar to that reported for Latinos nationally (Livingstone et al., 2009). It was interesting that although 99% of our participants completed the survey in Spanish and there was a low mean level of English-language acculturation, 44% reported using English or English and Spanish websites. Because 77% also reported the assistance of friends or family in accessing the Internet, it is likely that a portion of this assistance involved translation. It will be important to understand whether dependence on a third party to access the Internet affects the feasibility of its use for cancer control interventions. However, the increasing number of Spanish-language websites should increase the reach of Internet-based interventions. As safety net clinics increasingly use electronic records, are linked together in networks and provide Internet access to their patients, it is possible that the Internet could be used to efficiently prompt patients for screening examinations or other periodic health examinations.

The associations we observed between psychosocial factors such as information self-efficacy, trust, and risk perceptions may provide potential leverage points for future Internet-based interventions. For example, it is possible that training on use of the Internet will enhance self-efficacy in gathering cancer information, increase knowledge, and trigger desired cancer-related behaviors (Pena-Purcell, 2008).

Because personal relationships are important in Latino culture (“personalismo”), we expected that the impersonal nature of the Internet might be a barrier to use (Miller et al., 2007; Redmond, Baer, Clark, Lipsitz, & Hicks, 2010). However, we found that the Internet is a trusted channel of cancer information. This result may be related to the Latino cultural value of “respeto,” where those in positions of authority are given high respect, assuming that the Internet is viewed as an authoritative source. This trust could be leveraged to deliver cancer control messages. Our finding that those with higher perceptions of cancer risk were more likely to intend to seek cancer information online than those with lower perceived risk may be useful for framing messages to increase Internet traffic on cancer websites.

The demographic trends in Internet use noted in this immigrant Latino population are similar to those reported in other research (Livingstone et al., 2009; Miller et al., 2007). For instance, national surveys have found that the degree of language acculturation is related to Internet use in Latinos (Gordon & Iribarren, 2008; Livingstone et al., 2009; Vanderpool, Kornfeld, Rutten, & Squiers, 2009).

There are several caveats that should be considered in interpreting our results. First, the cross-sectional design does not allow us to draw inferences regarding causality. Second, we rely on self-reporting and do not know whether reports correspond with actual usage or, more important, whether use of the Internet leads to greater knowledge or changes in behavior. Next, our results are for a quota sample drawn to allow analysis of colorectal and breast cancer screening, so the sample is slightly older than the clinic average. This sample may also not be representative of those who receive care outside of safety net clinics. Fourth, we did not measure health literacy. In other research health literacy has been noted to be associated with Internet use in Latinos (Miller et al., 2007; Sarkar et al., 2010). We did, however, find a linear relation between increasing education and higher odds of using the Internet for cancer information, and to the extent that education correlates with health literacy, our results suggest that educational level and perhaps health literacy need to be considered in developing future interventions.

Disparities in Internet access to health and cancer information among medically underserved Latino groups falling into the health safety net could contribute to persistent inequities in cancer outcomes. Our results indicate that Internet use is moderate and that it is a trusted source of information among immigrant groups, providing a potential channel for communication of cancer-related information. This potential should be facilitated by the expansion of Spanish language, culturally appropriate Internet resources and the use of the Internet by safety net clinics to reach their populations with important health messages (Moore, Bias, Prentice, Fletcher, & Vaughn, 2009).

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Table 1

Bivariate associations between Internet access and demographic and psychosocial variables in an immigrant Latino population cared for in safety net clinics

	Access to the Internet						<i>p</i> [*]	
	Overall (<i>N</i> = 1,273)			Yes (<i>n</i> = 560)				
	<i>N</i>	%		<i>n</i>	%	<i>n</i>		
Mean age (range)	42 years	21–82		39	21–78	44	21–82	.0001
Gender								.11
Male	557	44		231	41	326	59	
Female	716	56		329	46	387	54	
Marital status								.41
Unmarried	470	37		198	42	272	58	
Married	784	62		349	45	435	55	
Unknown	19	1		13	68	6	32	
Region ^{**}								<.001
Central America	802	63		281	35	521	65	
El Salvador	552	43		—	—	—	—	
Guatemala	169	13		—	—	—	—	
Honduras	44	3		—	—	—	—	
Nicaragua	32	3		—	—	—	—	
Costa Rica	4	3		—	—	—	—	
Panama	1	—		—	—	—	—	
North America	122	10		57	47	65	53	
Mexico	114	9		—	—	—	—	
United States	8	1		—	—	—	—	
South America	349	27		222	64	127	36	
Bolivia	121	10		—	—	—	—	
Peru Ecuador	119	9		—	—	—	—	
Ecuador	41	3		—	—	—	—	
Colombia	36	3		—	—	—	—	
Chile	7	1		—	—	—	—	

	Access to the Internet						<i>p</i> [*]
	Overall (N = 1,273)			No (n = 713)			
	N	%	n	%	n	%	
Argentina	7	1					
Paraguay	6	—					
Venezuela	6	—					
Brazil	5	—					
Uruguay	1	—	—	—	—	—	
Education							<.001
<12 years	631	50	155	25	476	75	
12 years	320	25	172	54	148	46	
>12 years	297	23	223	75	74	25	
Unknown	25	2	10	40	15	60	
Perceived risk of cancer developing cancer							.15
Low	600	47	257	43	343	57	
High	528	41	249	47	279	53	
Unknown	145	11	54	37	91	63	
Worry about cancer (past month)							.49
Not at all or rarely	568	45	241	42	327	58	
Sometimes	444	35	201	45	243	55	
Often	114	9	48	42	66	58	
A lot	128	10	63	49	65	51	
Unknown	19	1	7	37	12	63	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Self-efficacy	6.8	1.6	7.0	1.5	6.6	1.7	<.0001
Acculturation	1.5	0.6	1.8	0.7	1.3	0.4	<.001
Trust in online health information	3.1	1.4	3.7	1.1	2.5	1.5	<.001

* Values were computed using chi-square tests for categorical characteristics and *t* test for continuous characteristics. Missing/refused was not included in the calculation of the *p* values.

**

Because numbers in specific countries were small, analysis was done at the regional level.

Self-efficacy ranges from 1 to 9 with higher scores representing higher self-efficacy.

\$watermark-text

\$watermark-text

\$watermark-text

Acculturation ranges from 1 to 5 with higher scores representing higher acculturation.

Trust in online health information ranges from 1 to 5 with higher scores representing higher trust in online health information.

Table 2

Bivariate associations between using the Internet as a cancer information source and psychosocial and demographic variables in an immigrant Latino population with Internet access seen in safety net clinics

	Intent to use Internet as cancer information source if needed						<i>p</i> [*]
	Overall (<i>N</i> = 560)		Yes (<i>n</i> = 301)		No (<i>n</i> = 259)		
	<i>N</i>	%	<i>n</i>	%	<i>n</i>	%	
Age, years							
<i>M</i> (range)	39	21–78	37	21–66	42	21–78	
<50	433	77	248	57	185	43	.002
50	127	23	53	42	74	58	
Gender							.13
Male	231	41	133	58	98	42	
Female	329	59	168	51	161	49	
Marital status							.04
Unmarried	198	35	117	59	81	41	
Married	349	62	175	50	174	50	
Unknown	13	2	9	69	4	31	
Region							.04
Central America	281	50	136	48	145	52	
North America	57	10	33	58	24	42	
South America	222	40	132	59	90	41	
Education							<.001
<12 years	155	28	55	35	100	65	
12 years	172	31	90	52	82	48	
>12 years	223	40	151	68	72	32	
Unknown	10	2	5	50	5	50	
Perceived risk of cancer							.005
Low	257	46	120	47	137	53	
High	249	44	147	59	102	41	
Unknown	54	10	34	63	20	37	
Worry about cancer							.81

	Intent to use Internet as cancer information source if needed					
	Overall (N = 560)			Yes (n = 301)		
	N	%		n	%	n
Not at all or rarely	241	43		131	54	110
Sometimes	201	36		110	55	91
Often	48	9		23	48	25
A lot	63	11		32	51	31
Unknown	7	1		5	71	2
						29
	M	SD		M	SD	p
Self-efficacy	7.0	1.5		7.2	1.4	6.8
Acculturation	1.8	0.7		1.9	0.8	1.6
Trust in online health information	3.7	1.1		4.0	0.9	3.4

* Values were computed using chi-square tests for categorical characteristics and t-test for continuous characteristics. Unknown/refused was not included in the calculation of the *p* values.

Self-efficacy ranges from 1 to 9 with higher scores representing higher self-efficacy.

Acculturation ranges from 1 to 5 with higher scores representing higher acculturation.

Trust in online health information ranges from 1 to 5 with higher scores representing higher trust in online health information.

Table 3

Adjusted odds ratios for the associations of psychosocial and demographic variables with Internet access and use of the Internet as a source of cancer information, respectively, in an immigrant Latino population cared for in safety net clinics

	Internet access [*]			Intent to use Internet as cancer information source ^{**}		
	OR	95% CI	p	OR	95% CI	p
Age (years)						
<50 vs. 50	1.74	[1.24, 2.45]	.002	Per 10-year increase	0.65	[0.53, 0.80]
Gender						
Female vs. male	1.45	[1.08, 1.95]	.01	Female vs. male	0.68	[0.43, 1.06]
Marital status						
—	—	—	—	Married vs. unmarried	0.73	[0.46, 1.16]
Education (years)						
12 vs. <12	2.02	[1.43, 2.86]	<.001	12 vs. <12	2.24	[1.27, 3.93]
>12 vs. <12	3.39	[2.27, 5.07]	<.001	>12 vs. <12	3.22	[1.79, 5.80]
Perceived risk of cancer						
—	—	—	—	High vs. low	1.76	[1.14, 2.73]
Self-efficacy						
Per one-unit increase	1.10	[1.01, 1.22]	.05	Per one-unit increase	1.24	[1.06, 1.44]
Acculturation						
Per one-unit increase	2.60	[1.97, 3.42]	<.001	Per one-unit increase	1.60	[1.14, 2.23]
Trust in online health information						
Per one-unit increase	1.68	[1.51, 1.88]	<.001	Per one-unit increase	1.47	[1.19, 1.82]

^{*} Adjusted results from a logistic regression model that included all listed predictors and country of origin ($N = 1,092$). Hosmer-Lemeshow goodness-of-fit test: $p = .886$.

^{**} Adjusted results from a logistic regression model that included all listed predictors and country of origin ($N = 428$). Hosmer-Lemeshow goodness-of-fit test: $p = .511$.