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Disparities in family health-related internet and email use in the general pediatrics setting

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Introduction

Consumer-centered health information is increasingly accessible through the internet¹. Many electronic health records (EHRs) offer internet portals for patient/provider communication². Likewise, many websites address parents' concerns about child health. However, parents may not have equal access to online technology, since using these technologies requires both financial resources and computer literacy³.

Prior research has demonstrated disparities in use of health information technology (HIT) along racial/ethnic and socioeconomic lines²: Studies have found that minority patients and patients with limited English proficiency enroll in and use patient portals less than English speaking, non-Hispanic whites^{4,5}. However, few studies assess disparities in use of HIT to communicate with health care providers, and none have assessed disparities in a pediatric setting. Understanding how families use online technology, and which families are more likely to use it, may allow for better provider/family communication.

Additionally, access to online communication with providers is a key quality metric for Meaningful Use of EHRs, a federal incentive program requiring providers and health care facilities to adopt, implement, or upgrade EHR technologies. To meet Stage 2 Meaningful Use criteria, providers are required to "Use secure electronic messaging to communicate with patients on relevant health information."⁶ Thus, access to these technologies in underserved populations may also be of financial interest to pediatric providers.

The goal of this study was to understand which patient, family, and technology use characteristics were associated with overall internet use for health information, as well as internet use to communicate with a health care provider, with a particular focus on underserved families who might have less access to HIT.

Methods

Survey content

As part of a clinic-based quality improvement project, we conducted a written, self-administered survey to parents seeking care for their children at an urban academic general pediatrics clinic in Fall, 2011. The five-minute self-administered survey asked parents if they owned any device that could access the internet (including computers, smart phones, and iPad or other handheld device), how often they checked email or accessed the internet in the past week, and at what locations (home, work school, library) they accessed the internet in a typical week. To assess use of the internet to access health information, the survey asked, "In the past year, how many times did you use the Internet to go to a health or medical website, such as [institutional website], WebMD, Medline Plus, Mayo Clinic, or the American Academy of Pediatrics?" To assess use of the internet to communicate with a provider, the survey asked, "In the past year, how many times did you communicate with a health care provider using email or MyChart?" MyChart is the name of our institution's EMR patient portal (Epic; Verona, Wisconsin).

The survey also collected socio-demographic information, including child age, parent race/ethnicity, parental educational attainment, and household primary language. Previously validated or used items were used whenever possible^{7,8}. The survey is available from the authors upon request.

Survey administration

All parents seeking well-child or urgent care for children 12 years old during the study period were offered the survey. English or Spanish language surveys were distributed and collected by front office staff. We estimate that the survey captured 30–40% of all eligible clinic visits during the study period. A pilot version of the survey was fielded in July 2011; the survey was subsequently fielded between August and November 2011. The study received institutional IRB approval.

Data analysis

We used descriptive statistics to measure parent internet technology use overall, to access medical information, and to communicate with a provider. We used chi-square tests and logistic regression to test parent, household and general technology use associations with internet use for health or medical information and with internet use to communicate with a provider, adjusting for parent characteristics (age, educational attainment, race/ethnicity), household characteristics (presence of teenager in household, household primary language), and technology use characteristics (owning a computer, owning a smartphone, daily internet access, daily email access).

Results

Sample

458 parents completed the survey. The median parent age was 32, and 41.5% had graduated from college. The sample was 62.2% white non-Latino, and 15.5% Latino. Spanish was the primary household language for 6.3%.

Technology use

Overall, 72.5% owned any device that could access the internet. 87.3% had internet access at home. 72.8% of parents checked email daily, and 82.2% accessed internet daily in the previous week. In the prior year, 78.1% used the internet for health information, and 47.3% used the internet to communicate with a provider (Table 1).

Associations with use of internet to access health information

On bivariate analyses, multiple factors had significant associations with use of the internet to access health information. These included older parent age, higher parent educational attainment, parent white race/ethnicity, having a teenage child, English household language, having a computer at home, and accessing email or internet daily (Table 2). Large differences were observed in internet use according to parent education: less than half of parents with < high school education had used the internet for health information, compared to >90% of college graduate parents. On multivariate analysis, parent educational attainment was the only factor significantly associated with use of the internet to access health information (Table 2).

Associations with use of internet to communicate with a provider

On bivariate analysis, older parent age, higher parent educational attainment, parent white race/ethnicity, English household language, and daily internet or email use were associated with use of the internet to communicate with a provider. Large differences were seen in parent education (8% of parents with < high school education versus 68.3% of college graduates), and household primary language (12.5% of parents in Spanish language households versus 50.7% of parents in English language households). On multivariate analysis, higher parent age, higher parent educational attainment, English household language, and daily email use were associated with use of the internet to communicate with a provider (Table 2).

Discussion

This study demonstrated that even though most parents have internet access, disparities existed in parent HIT use. In particular, families with lower parent education were less likely to use the internet to access health information, and families with lower parent education or Spanish primary language were less likely to use the internet to communicate with a health care provider. Data are consistent with other research suggesting that Latinos, African Americans, and people with lower educational attainment have less access to the internet generally;³ however, this study adds to the literature by suggesting that these families use less HIT in a meaningful way, at least in the pediatric health care setting.

The reasons that disadvantaged families are not using HIT may be complex. Families may lack access to the internet overall³, although this was relatively uncommon in our sample and our multivariate results adjusted for frequency of use. Underserved families may also have different patterns of internet usage², less trust of institutional websites, or lower health literacy⁹ that may limit the usability of such resources. Families with lower literacy or English proficiency may not feel comfortable with written correspondence with a provider. Families with limited English proficiency may have difficulty navigating websites and patient portals that are in English exclusively.¹⁰

Study findings have practical implications for providers seeking enhanced electronic communication with their patients, or who wish to satisfy Stage 2 Meaningful Use requirements. Pediatric providers intending to share medical information with patients via the internet should understand that this information may be less accessible to underserved families, who may also have the highest information needs. Reliance on online communication for underserved families at this point may not be an effective strategy, and may be problematic for meeting Meaningful Use requirements.

Providers can help remediate these disparities by making sure enrollment in patient portals is straightforward, and that the patient interface is easy-to-use. Making information available in multiple languages on the internet and in patient portals will facilitate patient-provider communication. Additionally, providing information in multiple formats, including mobile phone, which was frequently used by survey participants and may be even more prevalent now, may make HIT access more equitable.

This study had limitations. First, data were collected by parent report and may not reflect actual behavior. A written survey mode may have excluded parents with very low literacy, since they would have difficulty completing it. Additionally, the data were collected at the end of 2011, and internet use patterns (particularly mobile phone at tablet computer devices) may have changed substantially since then. The sample was 83% white, which may have limited our power to detect some racial/ethnic differences. Some measures of socioeconomic status, such as household income, were not practical to collect in the pediatric office setting. As a single-center study, findings may have limited generalizability to other settings. However, given how little is known on this topic, this research may be an important first step.

The findings suggest that lack of online access to health information and health care providers be exacerbating existing health disparities experienced by disadvantaged populations. Pediatric providers may need additional support if they want to make electronic health information accessible for everyone.

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Table 1

Parent Technology Use

	Percent of Sample (n = 458)	n
Devices Owned		
Computer	62.5%	286
Smart phone	26.0%	119
Tablet computer	4.2%	19
Any device	72.5%	332
Internet Access at Home		
Yes	87.3%	400
No	12.7%	58
Check email daily		
Yes	72.8%	438
No	27.2%	119
Access internet daily (other than for email)		
Yes	82.2%	360
No	17.8%	78
Communicated electronically with provider in last year		
Yes	47.3%	206
No	52.8%	230
Used internet to access health information in past year		
Yes	78.1%	433
No	21.9%	95

Table 2

Bivariate and Multivariate Findings

	Used internet to access health information in past 12 months		Communicated electronically with provider in past 12 months	
	Percent in category with outcome	AOR (CI)	Percent in category with outcome	AOR (CI)
Parent Characteristics (n)		R-square = 0.14		R-square = 0.13
Age				
<30 years (163)	73.4% *	1	33.8% ***	1
30 years or more (266)	82.1% *	1.08 (0.56–2.09)	55.5% ***	1.74 (1.09–3.21)
Educational Attainment				
College Graduate (183)	92.2% ***	1	68.3% ***	1
High School Graduate (217)	73.1% ***	0.33 (0.16–0.71)	36.7% ***	0.50 (0.30–0.84)
<High School Graduate (40)	43.2% ***	0.09 (0.03–0.26)	8.1% ***	0.07 (0.02–0.32)
Race/Ethnicity				
White non-Latino (284)	83.2% **	1	52.3% **	1
Hispanic/Latino, any race (71)	64.1% **	1.73 (0.47–6.42)	31.3% **	1.93 (0.74–5.02)
Other non-Latino (88)	75.0% **	0.89 (0.44–1.78)	44.2% **	1.04 (0.58–1.86)
Household Characteristics (n)				
Have teenager in household				
Yes (105)	81.2% **	1	39.2%	1
No (330)	68.6% **	0.73 (0.36–1.48)	49.8%	0.66 (0.36–1.19)
Primary Household Language				
English (383)	81.8% ***	1	50.7% **	1
Spanish (27)	50.0% ***	0.29 (0.06–1.46)	12.5% **	0.14 (0.03–0.69)
Other/Multiple Language (17)	68.8% ***	0.76 (0.17–3.46)	56.3% **	1.75 (0.45–6.83)
Technology Use (n)				
HH Member owns computer				
Yes (286)	81.2% *	1	49.7%	1
No (172)	72.2% *	0.78 (0.43–1.42)	42.7%	1.05 (0.63–1.75)
HH Member owns smartphone				
Yes (119)	81.4%	1	52.5%	1
No (339)	76.8%	0.82 (0.41–1.66)	45.3%	0.89 (0.52–1.52)
Access internet daily				
No (78)	59.2% ***	1	26.3% ***	1
Yes (360)	82.1% ***	1.55 (0.70–3.42)	51.7% ***	0.67 (0.29–1.57)
Check email daily				
No (119)	62.1% ***	1	20.3% ***	1

	Used internet to access health information in past 12 months		Communicated electronically with provider in past 12 months	
	Percent in category with outcome	AOR (CI)	Percent in category with outcome	AOR (CI)
Yes (319)	83.9% ***	1.92 (0.91–3.42)	57.2% ***	4.38 (2.01–9.54)

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; HH, household

* omnibus chi-square $p < 0.05$

** omnibus chi-square $p < 0.01$

*** omnibus chi-square $p < 0.001$