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Use of Technology with Health Care Providers: Perspectives from Urban Youth

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Abstract

Objective—To evaluate urban youths' use of and access to technology and solicit their opinions about using technology with healthcare providers.

Study design—Urban youth (aged 14–24 years) were invited to participate in focus groups in which a trained focus group facilitator used a survey and a structured guide to elicit responses regarding the foregoing objective. All sessions were audiotaped and transcribed. Emergent themes were determined with the assistance of Atlas TI. Survey data were analyzed in SPSS (SPSS Inc, Chicago, Illinois).

Results—Eight focus groups including 82 primarily low-income urban African-American adolescents and young adults (mean age, 18.5 years) were completed. The participants reported fairly high access to and use of technology. However, they expressed some concerns regarding the use of technology with healthcare providers. Many worried about the confidentiality of conversations conducted using technology. Face-to-face meetings with a healthcare provider were preferred by most participants, who felt that the information provided would be better tailored to their individual needs and more credible.

Conclusion—Although urban youth were high users of technology, they expressed reservations about using technology with health care providers. When developing new technology communication and information dissemination strategies, it is critical to understand and address these concerns while involving young people in the research and development process.

Today's adolescents and young adults have never experienced a world in which computers, the Internet, cell phones, and MP3 players did not exist. Large-scale studies report fairly widespread use of technology by youth: 93% use the Internet, 87% use e-mail, 75% have their own cell phone, 73% use social networking services, and 68% use instant messaging.¹ This widespread use has resulted in numerous new applications of technology aimed at improving the health of youth, including informational Web pages (eg, clinic pages,

WebMD), Web-based modules,²⁻⁴ Web-based management systems,⁵ appointment reminder text messages,⁶ and social networking site interventions.⁷

Over the past decade, the “digital divide,” or differential access to technology for lower-income and minority youth, has diminished, partially because of the increasing availability of computers in schools and libraries.⁸ However, recent studies have still demonstrated differential access and utilization practices, with low-income adolescents less likely to have a computer at home and more likely to access the Internet on their cell phones.¹ Thus, the need to consider the access and use practices of lower-income and minority youth remains important when designing technology-based health interventions to ensure equal access to and effectiveness of interventions.

In addition, the use of technology-based health interventions has been supported by an assumption that because adolescents and young adults are large consumers of technology, they will welcome the use of technology with their healthcare providers. Technology-based interventions have been suggested as a way to decrease missed appointments,⁶ improve medication adherence,⁹ and generally enhance communication between health care providers and adolescents.¹⁰ Although many interventions have been attempted to accomplish this, adolescents’ and young adults’ preferences for using technology with healthcare providers remains largely unexplored, particularly for low-income minority youth.

Accordingly, in the present study we solicited and examined adolescents’ and young adults’ opinions regarding the use of technology with their healthcare providers. We focused on urban minority low-income youth, a group particularly vulnerable to the digital divide, and sought to understand their access to and use of various forms of technology.

Methods

Participants were recruited between October 2010 and April 2011 from a primary care clinic site and a community site. Both sites expressed the desire to improve delivery of services to youth using technology. The primary care clinic wished to expand its adolescent and young adult (aged 14–21 years) health and education counseling program, and the community site wished to improve its provision of mental health services to youth (aged 16–22 years) enrolled in an employment and job training program. Both sites are located in a large urban city in the mid-Atlantic region. Youth were eligible for participation if they were enrolled in one of the programs and spoke English. Participants were recruited either by mail followed by a phone call or by in-person contact at site activities.

Written parental consent was obtained for participants under age 18 before involvement in the focus group. Written consent/assent, as appropriate, was then provided by the youth at the focus group session. Each participant received \$30 as remuneration. This study was approved by the Institutional Review Board of the Johns Hopkins School of Medicine and the 2 recruitment sites.

Generally accepted procedures were used for focus group data collection.¹¹ A trained moderator conducted each focus group session using a focus group guide developed by the

project team. A trained note-taker was present at each focus group session to assist as well as take notes about possible themes, nonverbal communication, and focus group dynamics (eg, disruptions, quiet participants). Four focus groups were held at each program location, for a total of 8 groups.

At the beginning of each focus group session, participants completed a short survey that solicited demographic information (ie, age, sex, race, educational attainment, employment status, maternal education) as well as information about access and use of various forms of technology, including computer, Internet, e-mail, cell phone, texting, social networking, instant messaging, and Web cameras. After completion of the survey, the focus group aims were discussed, and guidelines for appropriate and respectful conversation were established.

A focus group session consisted of 2 parts, current technology practices and preferences for communication with healthcare providers, each of which was facilitated by asking open-ended questions followed by probing questions. The first part asked participants to discuss their current practices using technology to get information, communicate, and build relationships. The second part solicited participants' opinions about the use of different types of technology with healthcare providers by providing a set of scenarios. Scenarios included the doctor recommending a Web page, a virtual healthcare visit using a Web camera, a clinic social networking page, weekly informational texts, and texting appointment reminders or coded test results (Table I). Each focus group lasted 60–90 minutes, and all sessions were audio recorded and professionally transcribed.

The data analysis process began with a debriefing session after each focus group. This session allowed the focus group moderator and the note-taker to begin to identify key themes. Annotated transcripts were uploaded into Atlas TI version 6 (Scientific Software Development, www.atlasti.com), a qualitative program that aids data management. Coding of transcripts was an ongoing process and was done concurrently with data collection. This allowed for a better understanding of when saturation had been reached and of emergent themes to be explored in later focus groups. The research team felt that saturation of key ideas was reached after 8 focus groups.

A data-driven philosophy was used to code the transcripts, with new ideas emerging from participant statements, consistent with an inductive approach to data analysis. A coding scheme was developed through an iterative process in which 2 trained research assistants read through the first 2 focus group transcripts, open-coded, and then met to compare ideas. Through this process, a codebook or set of operational definitions of key themes was developed. Once the codebook had been developed, 3 transcripts were coded independently by the research assistants, with differences in coding adjudicated by a third member of the research team. This process is commonly used in qualitative research to ensure the reliability and validity of data.¹²

Survey data was entered into SPSS version 18 (SPSS Inc, Chicago, Illinois). This program was then used to provide descriptive statistics on urban adolescents' and young adults' access to and use of technology.

Results

Eight focus groups, each with between 5 and 14 participants, were conducted with 82 adolescents and young adults (38 from the primary care clinic and 44 from the community site). The mean age of participants was 18.5 ± 2.2 years. The participants were split evenly between the sexes (50% male), and the vast majority self-identified as African-American (96%). More than 60% of the participants' mothers had a high school diploma or less. Some 28% of the participants were in high school, 19.5% had a high school diploma or a General Education Development test, 12.2% were in college, and 40.2% were not currently in high school (Table II).

Access and Use of Technology by Urban Youth

The participants reported fairly high access to and use of technology. Approximately 90% of the adolescents and young adults reported having access to a computer, the Internet, or a cell phone, and almost half (48%) had access to a Web camera. One theme that emerged from the focus group was the integrated nature of technology. More than 62% of the participants reported being able to access the Internet on their cell phone. Over half (51.9%) reported using the Internet to search for health information. Texting was the dominant form of technology use (94%), with participants reporting a mean of 50 texts per day. In the words of one participant, "I text all day, every day, every 5 minutes." Although 93% of participants reported having an e-mail account, only 28.8% reported checking it daily. Participants described very specific uses for e-mail, including professional communication (eg, jobs and teachers), sharing of pictures, and signing up for services (eg, Facebook, Twitter). In response to a question about whether they preferred texting or e-mail, one participant responded, "Well they both come to my phone, so it don't matter." Social networking site use was high (83%); however, participants described their use in terms of social drama: [Facebook is] "a bunch of drama. You [re] always hearing things on Facebook." The Figure displays technology access and use patterns in the study participants.

Perceptions of Technology-Based Health Interventions

Many participants expressed concerns about the use of technology with healthcare providers (Table III). A primary concern was the privacy of information communicated via technology. The participants felt that information transmitted using technology was susceptible to being seen and interpreted by others. This was of particular concern for information exchanges occurring via social networking sites or texting. For social networking sites, participants worried about what their friends would think of their "liking" or having posts from their healthcare provider on their page. In the words of one participant, "I would be worried that somebody would take it the wrong way".

Concerns about texting were driven by the fact that cell phones often get used, with or without permission, by friends. "Anybody could use your phone, and you don't want everybody to know your information." Youth stated that even coded messages about diagnoses would trigger unwanted questions from friends or parents. Although some participants reported taking actions to protect the privacy of their phone (eg, locking the

phone), others reported not being able to do so, not wanting to be perceived as hiding something from their significant others.

Another technology that evoked privacy concerns was the use of a Web camera. Participants were worried about possible privacy violations on both ends of the conversation. This included a mistrust of the anonymity of the interaction with the provider, as well as the availability of private space to conduct the conversation in the home.

Because of these concerns, many adolescents in our study expressed a preference for in-person contact with their healthcare provider (Table III). One of the main reasons for this was a general sense of comfort; using technology to communicate with the healthcare provider just seemed odd. “I still would feel like it’s informal, like, ‘Dang, you can’t tell me in person?’.” This comment was particularly associated with discussions of communication using social networking sites or texting; these technologies are viewed as the domain of friends and family and thus personal.

The use of a Web camera evoked a slightly different definition of comfort, with participants desiring the physical interaction of a face-to-face visit. “I guess going for counseling like in person, I feel like they’re really listening to me. But if I do it with a Web cam, I don’t feel the same.” Participants were more amenable to conversations occurring using a Web camera if they already had an existing relationship with the healthcare provider. In the words of one participant, “Trust has to be established first.”

In response to the idea of healthcare provider referral to Web sites, the participants expressed concerns about the credibility and specificity of information received on the Internet. They valued getting information directly from their healthcare provider. They also valued the ability to ask questions, and perceived this to be hindered through the use of technology (eg, Web site referral or texting test results). One participant summed up his preference as, “Face to face interaction. Feels like they [healthcare providers] can like explain it thoroughly, like you can ask questions.”

Participants were divided about receiving text appointment reminders or weekly informational texts. Even though they recognized the convenience of receiving appointment reminders via text (eg, less time on hold, less likely to miss appointments), some still expressed concerns about privacy and content of text messages. One participant suggested that a text reminder would be okay, “As long as they don’t say, ‘Well on September the 10th you have an appointment at X so you can get your sexually transmitted disease test.’ Weekly informational texts were desired only if the information received was seen as useful. “As long the advice is worthwhile, I don’t have a problem. I don’t like wasting my time.” Participants expressed the opinion that worthwhile information was needed, inspirational/entertaining, and actionable.

Discussion

The urban youth in this study had high access to and use of various forms of technology, including computers, the Internet, and cell phones. The participants demonstrated little evidence suggesting the existence of a “digital divide” or that a technology-based

intervention would fail because of access difficulties. However, the participants' acceptance of technology-based interventions by healthcare providers was not universal. Concerns were driven by worries about the privacy of information exchanged using technology and the quality of both the information received and the interaction. This resulted in a preference for face-to-face interactions. However, there was an awareness that using technology to communicate with healthcare providers could be convenient and beneficial if used in the context of a relationship and in a manner that protected the right to privacy.

One worry expressed by the participants was the potential for information shared with healthcare providers using technology to be seen by nonintended individuals. The participants extended this concern past their parents, which traditionally has been the subject of discussion in the literature. Previous work has focused on the complexities of electronic medical health records for adolescents, given that certain information can be kept confidential from parents (eg, sexual health information).¹⁰ The extension of privacy concerns expressed in our focus group sessions might be related to the nature of the technologies being discussed. Social networking sites are designed to share information and are used primarily with peers. Ralph et al¹³ found hesitancy to join a health clinic's social networking page for similar reasons as uncovered in our study—the notion that social networking sites are not for information exchange and the possible misconceptions associated with “liking” a page. Even though text messaging and Web camera interventions are designed for the exchange of information, our participants cited concerns that the content of these conversations might be able to be accessed by others. It is important that healthcare organizations considering adopting the use of “newer” technology for communication and information dissemination with youth be aware of all potential sources of privacy violations and concerns.

One way to facilitate awareness of privacy issues, as well as encourage the uptake of technology-based health interventions, is by involving adolescents and young adults in the creation of interventions. Studies of similar populations of urban, at-risk youth have shown success in engaging youth in intervention design. Landbeck et al² involved youth in the design of a Web-based depression prevention module to “change the intervention from a content rich Internet self-help book to an esthetically pleasing and user-friendly didactic.” One study using messages that human immunodeficiency virus-positive youth created themselves found high acceptability of medication reminder text messages.¹⁴ Involving youth in the creation of technology-based health interventions can empower them to be active participants in communication about their health as well as take advantage of the importance of peers at this developmental stage.

Our participants were more likely to endorse technology health interventions that enhanced rather than replaced face-to-face interactions with their healthcare providers. A primary reason for preferring in-person visits was the improved credibility of information and the ability to ask questions. Although a previous study of parents of pediatric patients found a similar mistrust of information found on the Internet,¹⁵ studies of adolescents have generally assumed a preference for information found on the Internet because of the increased anonymity.¹³ However, a recent study found that although adolescents use the Internet to search for health-related information, they complement this with other information from

more trusted sources.¹⁶ Our participants were more accepting of appointment reminder text messages than of other technology-based interventions. In a study of the content of text messages between therapists and their adolescent clients, Furber et al⁶ found that the majority of texts concerned coordinating appointments. In addition, our participants were more accepting of all technology-based health interventions when they occurred in the context of a relationship with a healthcare provider. This was particularly true for virtual visits using a Web camera. For this population of urban youth, a trusting relationship with a provider must be in place before technology interventions can be successfully implemented.

This study points to the need for care when designing technology-based interventions in the healthcare setting. The success or failure of a particular intervention appears to be dependent not on access to technology by these urban, minority, low-income youth, but rather on the acceptability of the technology intervention. Similar to what has been found in nationwide studies of youth, decreased costs and increased capabilities of technologies (ie, low-cost cell phone/data plans) appears to have allowed urban youth to cross the digital divide.¹ However, our participants were guarded about using technology to communicate with healthcare providers. Although this possibly could represent a reaction to the novelty of some of these interventions, their statements highlight aspects of intervention design that need to be addressed to ensure maximum success of interventions. These include the design of “safe messages,” a discussion of confidentiality measures, and thinking through how technology based interventions can enhance rather than replace existing relationships between patients and healthcare providers.⁴ Future research directions include exploring perceptions of technology use with healthcare providers in different populations of adolescent youth and examining the acceptability as well as the effectiveness of designed technology interventions in improving communication and health outcomes.

This study was designed as a qualitative study, with a focus on generating feedback from a particular population about their receptiveness to the use of technology with healthcare providers. As such, it was not designed to be a representative study, and even though the ideas generated can be used to inform technology-based intervention design, these might not be generalizable to different populations. In addition, the participants volunteered for the study and might represent a group interested in technology, and thus might have greater access and use patterns than the general population from which we sampled. Regardless, to the best of our knowledge, the present study is one of a few studies examining the opportunities and barriers to using technology to improve the health and healthcare of adolescents and young adults. ■

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Figure.

Urban youths' access to and use of technology (n = 182). *IM*, instant messaging.

Table I.

Scenario descriptions

Technology-based health Intervention	Text prompt
Referral to a Web site	You have been talking to your doctor because you've been feeling sad and not wanting to do your usual favorite activities. The doctor mentions that you may have depression. He recommends a Web site that has interactive activities to help you work through some of your feelings.
Virtual counseling	You have the option of e-counseling. Like traditional counseling, this involves regular contact with a therapist, who will listen and provide advice. However, unlike traditional counseling, your conversation occurs using a Web camera from a location outside the office.
Referral to a social networking site	On Facebook, your doctor sends you a message suggesting you go to their Facebook site for health information.
Weekly informational texts	You have the option of receiving weekly text messages with general information to help you better handle stressful situations. Text messages would say things like "Half of all young people say that school stresses them out. Are you one of them? Taking deep breaths and thinking about something positive can help."
Texting appointment reminders	Your doctor wants to text you appointment reminders. The reminder would list your appointment date and time.
Texting test results	Your doctor wants to text you the results of some of your tests. They set up a code system with you (1 for positive and 2 for negative). They also tell you that a result is positive, you need to call and set up an appointment. If you have any questions, you can call at any time.

Table II.

Demographic characteristics

Age, years, mean (SD)	18.5 (2.2)
Race, n (%)	
African-American	78 (96)
Other	3 (4)
Sex, n (%)	
Male	39 (50)
Female	39 (50)
Educational status, n (%)	
In high school	23 (28)
Graduated from high school/GED	16 (19.5)
In college	10 (12.2)
Did not complete high school/no GED	33 (40.2)
Employment status, n (%)	
Employed	18 (22.2)
Unemployed	63 (77.8)
Maternal educational attainment, n (%)	
High school	41 (60.3)
>High school	27 (39.7)

GED, General Education Development test.

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Table III.

Youths' statements about the use of technology with healthcare providers in response to potential technology- based health interventions

Privacy	
Desire for information protection	<p>"Why are you sending to the Internet? This is something you can discuss in person; you don't need to put the information on the Internet." (social networking site referral)</p> <p>"And say if my mother is sitting like right here and I read my text message. [She says] 'What's that?' I'm like, 'Oh, nothing.' Well, who wants you to call them or who number is that?" Like just asking questions-so I'd just rather not." (texting test results)</p> <p>"People aren't stupid. They can put two and two together. Somebody might see that and be like, 'Oh, she just came from the doctor so she might of gotten it.'" (texting test results)</p>
Concern about the communication means	<p>"Anybody can get your text messages and see what you say." (texting test results)</p> <p>"You don't know who's on the other side of your Web cam." (virtual counseling)</p> <p>"Basically, I'd rather go to the office and talk to them, and that's because I know nobody ain't outside the door listening. You could be talking about your mother or something, and she right in the hallway listening to you." (virtual counseling)</p>
Preference for in-person contact	<p>"There's just something special about that [face-to-face] interaction." (virtual counseling)</p> <p>"It would make me feel more comfortable with you calling me. I'm gonna need details, you know." (texting test results)</p>
General comfort	<p>"How does the doctor know even if all the information is correct?" (referral to a Web site)</p> <p>"I don't trust the Web site. I mean, I don't like it, because it gives you a whole different world.It's just that I just don't trust it." (referral to a Web site)</p>
Credibility of information	<p>"How do you know you aren't going to need somebody to sit there and say, 'Okay, this is what they mean by it?'" (referral to a Web site)</p> <p>"You can get to ask questions. Texting to an automated system ain't going to work." (texting test results)</p>
Desire for tailored information	