Leveraging technology for health equity

Jiménez , AL; Malavé de León, E; Sims, G; Hiraldo-Lebrón, CM; Small, PG; Kamel Boulos, Maged N.

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Chapter 16
Leveraging Technology for Health Equity

Aida L. Jiménez, Eunice Malavé de León, Ginette Sims, Celsie M. Hiraldo-Lebrón, Phillip J. Small, and Maged N. Kamel Boulos

Over the last 20 years, information technology (IT) has transformed the way that people all over the world live. From revolutionizing the manner in which society communicates to affecting the way that people acquire and substantiate information [1], IT has changed the way that humans interact with one another and the various systems in which they live. IT also has the potential to transform the way that healthcare providers (HCPs) communicate and deliver services [2, 3] and bridge health disparities.

A.L. Jiménez, PhD (✉)
Department of Psychiatry, Vanderbilt University,
1601 23rd Ave South Room 3050 FA, Nashville, TN 37212, USA
e-mail: aidaljimenez@aol.com

E. Malavé de León, EdD, LCSW
Behavioral Health Department, Southside Medical Center, Atlanta, GA, USA
e-mail: em743@nova.edu

G. Sims, BA
Department of Psychiatry, Massachusetts General Hospital Psychiatry, Center for Diversity, McLean Hospital, Belmont, MA, USA
e-mail: gsims@partners.org

C.M. Hiraldo-Lebrón, PhD
Behavioral Health Department, NYU Lutheran Medical Center, Brooklyn, NY, USA
e-mail: chiraldo@lmcmc.com

P.J. Small, MA
Department of Psychology, Arizona State University, Tempe, AZ, USA
e-mail: psmall@asu.edu

M.N. Kamel Boulos, MD, PhD
The Alexander Graham Bell Centre for Digital Health, University of the Highlands and Islands, Inverness, UK
e-mail: maged.kamelboulos@uhi.ac.uk

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In today's society, the Internet has become a main source of medical information [4], contributing to a person-centered healthcare system that empowers patients to become active participants in their care by making information more accessible and self-directed learning more common and convenient [5]. Given this reality, HCPs must be competent in using the services the Internet provides to best guide patients towards the appropriate treatment. The purpose of this chapter is to explore ways in which IT can address the health needs of vulnerable populations and reduce prejudice for populations including those discussed in previous chapters. We will discuss current disparities in healthcare, the ways in which IT has changed healthcare, IT tools that have assisted underserved populations today, and ethical and logistical challenges involved with the use of technology in healthcare.

Healthcare Disparities

Health disparities continue to exist in multiple populations [6]. Healthcare services are still distributed inefficiently and unevenly across populations. For example, the literature provides evidence that people with disabilities [7], homeless individuals [8, 9], immigrants [10, 11], and those who struggle with substance abuse [12] face many barriers to treatment and have inadequate access to quality healthcare services. Vast research also shows health disparity among racial and ethnic minorities and rural populations. Even though we don't cover these populations in section one, IT has demonstrated to be a potential tool to increase health equity for these disenfranchised groups. Racial and ethnic minorities often receive poorer quality of care [13, 14], are less likely to seek healthcare services [15], often leave treatment prematurely, and have lower levels of attendance and retention in healthcare than non-Latino whites [16, 17].

Further, more than 20 million people in the United States live in Medically Underserved Areas (MUAs) [7] that have a shortage of physicians to meet their basic healthcare needs [18]. One of the problems with the provision of care in MUAs is the difficulty in recruiting and maintaining health professionals in sufficient numbers to attend the needs of these populations [19]. Throughout the rest of this chapter, the authors will discuss how IT can work as an innovative method for reducing disparities in healthcare.

Prevalence of IT Use

Technology has become a ubiquitous part of life in the twenty-first century. Modern technology influences every aspect of our life from making payments and communicating with friends, family, and coworkers, to searching for health information and scheduling appointments with providers [1]. In 2011, about 30.2 % of

the world's population had access to the Internet.[1] In 2014, 90 % of American adults age 18 and older had a cell phone, 57 % had a laptop, and 19 % had a tablet computer; and about six in ten adults (63 %) went wireless with one of those devices [20].

Since 2004, teens have shown the greatest Internet use of any age group [21]. Ninety-two percent of teens report going online daily, and 24 % report going online multiple times each day. Although the primary point of Internet access is through computers, accessing the Internet via smartphone is on the rise. Among teens, texting is the preferred method of communication, and the volume of teen texting has risen from a median of 50 texts a day in 2009 to a median of 60 texts a day in 2012 [21]. Teen girls text more than boys with a median of 100 texts a day compared to 50 texts a day in 2011. This youthful population represents the next generation of HCPs and patients alike.

Social media and social networking now reach at least four out of five active Internet users in the United States.[2] Americans now spend more time on Facebook than on Yahoo, Google, YouTube, Blogger, Tumblr, and Twitter combined. Similar findings have been reported in Europe.[3] In August 2015, Facebook reached a new milestone of a billion users in a single day.[4]

Unlike the commonly held belief that social networking is mainly used by teenagers and young adults, a recent survey reported that use of Facebook and other social networking sites is on the rise among those aged 50–64. Approximately 33 % of Internet users in the 65-plus age group also used such sites [22], which some have described as the "graying of social networking sites." Introductory courses that teach how to use Facebook and Twitter for those aged 60 and older are now available, another testimony of the growing popularity of social networking tools among older generations.[5] IT is clearly a potentially important tool among aging populations.

A survey conducted with people with disabilities resulting from brain and spinal cord injuries found that 73 % of respondents used computers and had access to the Internet. This finding suggests IT tools can be a potential medium for the dissemination of health-related information and services for this underserved population [23].

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[1] World Internet Usage Statistics News and World Population Stats. Miniwatts Marketing Group, 31 March 2011: http://www.internetworldstats.com/stats.htm. See also http://geography.oii.ox.ac.uk/?page=internet-population-and-penetration.

[2] Nielsen. State of the Media – The Social Media Report 2012: http://blog.nielsen.com/nielsenwire/social/.

[3] Van Belleghem S. 347 million Europeans use social networks. Posted on 14 September 2011: http://blog.insites.eu/2011/09/14/347-million-europeans-use-social-networks-results-of-a-global-social-media-study/.

[4] BBC News. Facebook has a billion users in a single day, says Mark Zuckerberg. Posted on 28 August 2015: http://bbc.co.uk/news/world-us-canada-34082393.

[5] Toth S. Social media revolution: New courses in Howard County tap into Facebook's growing senior demographic. Posted on 12 December 2011: http://www.baltimoresun.com/explore/howard/publications/howard-magazine/bs-exho-social-media-revolution-20111212,0,6100789.story.

IT can be a potential medium to reach vulnerable and disenfranchised populations who may otherwise go without the care they require. With these new realities in mind, the authors recommend that HCPs become competent in the use of IT and help their patients navigate the new challenges and benefits of IT.

IT Competency

Achieving IT competency is critical for all HCPs. Emerging technology is widely and increasingly becoming an unavoidable part of our services. In fact, telemedicine guidelines encourage HCPs to assume responsibility and obtain relevant professional training, knowledge, and skills on the emerging areas of technology in order to teach and treat patients competently [24]. The youthful population of today has been termed "digital natives" because they have grown up using technology, while those of us who are trying to learn the new language of technology have been termed "digital immigrants" [25]. Digital immigrants retain their language of accessing information in traditional ways while learning a new language with accent [25].

HCPs need adequate digital language or eHealth literacy training for finding, interpreting, and evaluating the usefulness of health and medical-related information on the social web, in order to better serve their patients and the general public [26]. This term "eHealth literacy" ("e" for electronic) refers to the ability of individuals to seek, find, understand, and appraise health information from electronic resources and apply such knowledge to addressing or solving a health problem [26, 27]. Health literacy on the Internet requires computer and Internet literacy and skills for locating and appraising online health information [28].

Having access to the Internet and mastering the essential computer skills does not guarantee that a patient will be able to properly evaluate and understand online health information [26, 29]. There is a need to educate at-risk vulnerable groups to design social media presences in a way that benefits more patients [30]. Accessibility and eInclusion should be adequately addressed in such designs, ensuring "technology accessibility by all" and the participation of older people with lower access rates to the Internet and without the necessary skills to use the various social web tools, as well as the inclusion of other marginalized or disadvantaged groups of the society [31].

Developing eHealth places high demand in multiple competencies, including cognitive and behavioral, that can only be developed through regular education and practice [32]. HCPs need to learn and use the same language patients use, in order to better facilitate clear communications. HCPs also need to consider, for that same purpose, any specific cultural needs and the socioeconomic levels of different ethnic groups in the communities they are serving.[6]

[6] See the US National Medical Association's Cultural Competence Primer: http://www.webcitation.org/66BPe3CTo.

IT Tools for HCPs

The integration of technology and health has been termed "telehealth." The term refers to providing healthcare services remotely, via telephone, email, or videoconferencing. Other words used to refer to telehealth include telemedicine, mobile health (mHealth), or eHealth. Telehealth uses telecommunications and information technologies to provide access to health information, assessment, diagnosis, intervention, consultation, supervision, education, and follow-up programs across geographical distance [2, 33, 34]. The technology used in telehealth includes telephones, mobile devices, interactive videoconferencing, email, text, and resources found on the Internet like self-help websites, blogs, online therapy, and social media. Communication may be synchronous, which means having multiple parties communicating in real time (e.g., interactive videoconferencing and telephone), or asynchronous, which refers to time-delayed communication such as email, online bulletin boards, and the storing and forwarding of information. Telehealth was introduced decades ago, but it is gaining in popularity and relevance as VCTs have improved and become more accessible [35, 36].

At present there are many telehealth resources available for providers and patients, but for the purpose of enhancing health equity, the authors will focus on resources that have the potential to enhance healthcare quality for underserved populations. The following resources explained below are social networking, electronic health records (EHRs), videoconferencing technology (VCT), mHealth, and online therapy.

Social Networking

As discussed earlier, the use of social networking has rapidly increased in the last several years, and HCPs can no longer afford to ignore social media as a powerful means for reaching out to their patients. Health organizations should go where people already are online, rather than just build their own isolated web islands of read-only information portals and expect people to visit.

Research demonstrates that Internet use and online social engagement can protect against health literacy decline during aging, independent of cognitive decline [37]. It also offers opportunities for older people to keep healthy and combat social isolation [38]. The city of Barcelona has been a pioneer in developing digital inclusion eHealth programs targeting older and isolated people [38]. Another example of leveraging social networking to bridge health disparities is with racial and ethnic minorities. Researchers showed that Black non-Hispanics and Hispanics access the Internet, send and receive emails, and download applications (apps) more than White non-Hispanics [38].

Creating online tools and educational courses through social networking is an innovative way to decrease health disparities. The US Center for Disease Control (CDC) uses social media extensively in its own public campaigns and outreach

activities[7] and offers a number of excellent health literacy, social media, and social marketing training materials, guidelines, and toolkits that can prove very helpful to social media content developers and public health practitioners in general (Fig. 16.1).

The capacity to reach out to many people, quickly and with minimal costs compared to other forms of advertising, is among the strongest aspects of social media and can play an important role in health education, promotion, and outreach programs [39]. Online social networks and participatory communication methods can provide excellent opportunities for peer-to-peer support [40] and thus contribute to reducing the burden on conventional healthcare systems. PatientsLikeMe,[8] a social networking site for patients with various medical conditions, is now a classic example of online patient-to-patient support, and those using it often report a number of perceived benefits from improved disease self-management [41, 42].

Nonetheless, social media content needs to be tailored to suit the preferences of target audiences and their level of understanding. Involving patients in planning, implementing, disseminating, and evaluating online health information and services is of prime importance [43]. A strategy based on shared-audience information sets can be adopted to maximize the efficiencies of content authoring and delivery vs. varying degrees of patient literacy, from the expert patient to the completely illiterate patient [44].

With patients being able to freely text and post comments on an organization's social media, maintainers of social media pages should regularly monitor and moderate their content for any forms of spam or patient privacy violations. Healthcare agencies should develop clear policies regarding what HCPs and staff can post on the agency's social media page [45].[9] Other strategies include connecting social media technologies to evidence-informed online resources, matching new applications with the correct user populations, and integrating health communication best practices, including addressing health literacy issues in the relevant social media content and regularly running the latter through readers' panels[10] representing the full range of patient audiences [43, 46, 47].

EHRs

EHRs are digital versions of patients' paper charts, which contain information about patients' medical history, diagnoses, medications, immunization dates, allergies, and

[7] See http://www.cdc.gov/socialmedia/.

[8] PatientsLikeMe: http://www.patientslikeme.com/.

[9] For example, Mayo Clinic (USA) has its own guidelines for its employees and students who participate in social media: http://sharing.mayoclinic.org/guidelines/for-mayo-clinic-employees/.

[10] In the UK, readers' panels are now common across the NHS; the following Google query should retrieve some examples: http://www.google.co.uk/search?q=readers+panels+nhs.

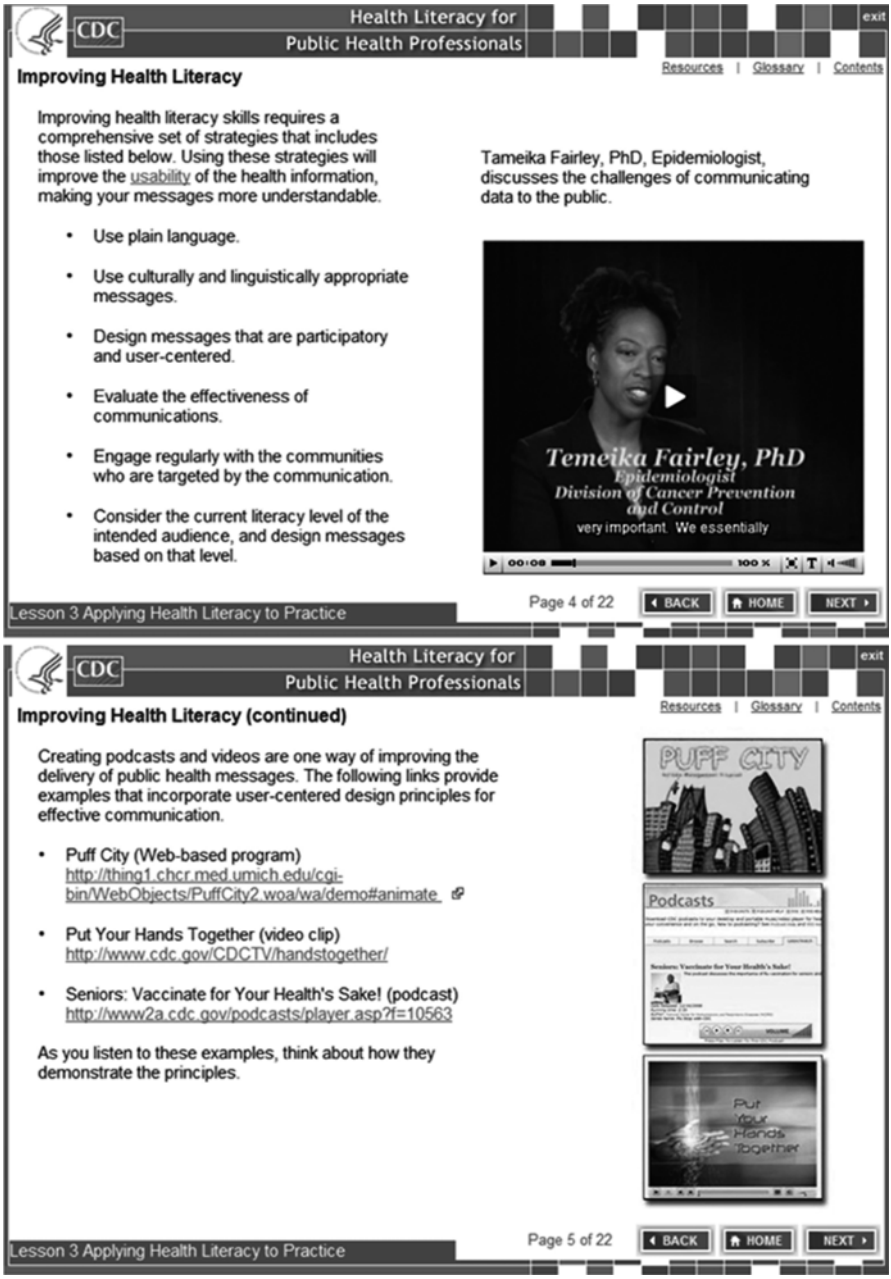

Fig. 16.1 Screenshots of the US CDC (free) online course entitled "Health Literacy for Public Health Professionals" (Source: Kamel Boulos [104])

lab and test results. In 2009, in an effort to eliminate health disparities in the United States, Congress passed the Health Information Technology for Economic and Clinical Health Act (HITECH) as part of the American Recovery and Reinvestment Act (ARRA). The Medicare and Medicaid EHRs Incentive Programs are funded by HITECH to develop and expand technology and broadband infrastructure and services, particularly in low-income and underserved remote communities, across the country. The 2009 ARRA calls for the use of EHRs in an effort to eliminate health disparities and increase the effectiveness and efficacy of care [48]. In an effort to provide better patient care, improved population health, and enable more informative research, the Institute of Medicine conducted a review on standardized measures of key social and health determinants that needed to be recorded in EHRs [49]. The following is social determinant information identified and recommended to be included in EHRs: sociodemographics, access to healthcare, access to healthy foods, financial resource strain, social support, environmental pollutants, exposure to violence, stress, affect (depression, anxiety), housing, discrimination, and racial segregation [49].

The inclusion of these social determinants in the EHRs provides valuable information of the effectiveness of treatments and allows HCPs to share information [50]. Sharing enables HCPs to have access to all available information related to the patient being served, thereby reducing the duplication of procedures and promoting the coordination of care delivery across different sites to reduce healthcare costs. Additional advantages of EHRs include the following: centralizing information, promoting data collection and analytics for evidence-based approaches to care delivery, facilitating population health management, facilitating consumer access to cost and quality information, and promoting the ability to conduct research to further understand and reduce disparity.

The EHR drawbacks are the upfront high cost, for the acquisition of the system, ongoing maintenance costs, temporary loss of productivity associated with learning the new system, and privacy and security concerns. Additional disadvantages is the exclusion of some eligible behavioral health providers that work in settings that traditionally serve immigrant and vulnerable population such as Community Health Centers and substance misuse treatment programs [51]. Extending the adoption of EHRs to HCPs might improve health outcomes for vulnerable populations. Ethical challenges surrounding the use of EHRs will be discussed later in the chapter.

VCT

VCT has been demonstrated as an efficient way of providing healthcare to medically underserved population such as patients in prisons, patients living in remote areas, and veterans, among others [52]. There has been difficulty in the health system in recruiting and maintaining health professionals in remote areas to attend the needs of these populations [19]. Therefore, VCT may have great implications for these underserved populations [53–55].

VCT is not just important for remote communities, but also for any underserved communities that have limited access to care. An example of this is the deaf

population, which is one of the most underserved communities [56]. A shortage of culturally and linguistically competent HCPs who can provide healthcare to deaf individuals causes disparity [56–58]. VCT has been an integral part of the deaf community over 10 years, and it has commonly been referred to as the videophone. VCT has been demonstrated as an effective tool for alleviating the barriers to healthcare access for the deaf individuals because it allows for signage [59, 60]. Use of VCT has improved access to care for deaf population, but there is still need for empirical evidence to support its effectiveness [59].

VCT is a proven tool in treating veterans, a special population in need of access to healthcare services and who often underutilize services due to stigma, stoicism, and lack of knowledge. VCT can be leveraged to address this gap in care [61]. Veterans are also overrepresented in the US homeless population (Department of Housing and Urban Development, 2011) and commonly develop medical and mental health disorders [62, 63]. To address the high rates of underuse of healthcare services, the VA has invested in innovative eHealth tools to improve veterans' access to healthcare services [64]. Now health services can be provided to veterans in remote, community-run clinics through closed-circuit video communication between the patient and HCP.

VCT could also prove important for high-profile celebrities like athletes and Hollywood actors who often travel for weeks at a time. Using VCT to access healthcare may help VIPs avoid the trouble of being seen seeking certain healthcare services. There is a particular stigma attached to admitting the need for healthcare in the realm of sports, which makes IT potentially even more important [65].

The research is not robust yet, but the authors' believe that VCT can provide services to other vulnerable populations discussed in section one. IT is going to continue to proliferate and make its way into medicine, and it is likely to reach people that have not been reached before.

Scientific literature pertaining to the use of VCT identifies several barriers. For example, with regard to rural areas, rural cultural beliefs might be a barrier to the implementation of VCT. One value associated with rural cultural beliefs is the preference for social relationships that are face to face and personal rather than impersonal such as relationships developed via computers and telecommunication [66]. Some additional difficulties in implementing VCT in remote areas are lack of computer literacy, lack of technological comfort, lack of funding to provide an appropriate infrastructure, cost of implementation of these technologies, cost and availability of trained health workers and supporting staff, and adaptation of these technologies into the workflow [67]. Since underserved populations tend to have a higher degree of complexity in the management of their health conditions, any effective IT program needs to be tempered with the special characteristics of the populations to be served [68].

mHealth

One prediction in 2010 was that mobile web access via smartphones and other Internet devices, such as the Apple iPads and small touch-screen tablets, would

overtake conventional desktop Internet use by 2015.[11] UK mobile Internet use was already nearing 50 %, according to a 2011 Office for National Statistics (ONS) report.[12] The mobile social web is now enabling people to easily share, rate, recommend, and find software apps about almost any topic. A mobile app for trusted and reliable health advice offered by the National Health Service (NHS) in England was downloaded by more than one million persons in its first 6 months after launch in May 2011.[13]

In this age of smartphones and wearable technology, many healthcare providers are using the information available on these devices to track patients' heart rate, exercise, and other health information. This innovation in technology has the capability of benefiting HCPs by using phone apps and even more advanced technology. Such apps could include mood trackers, thought journals, behavioral records, accessible notes, and phone-accessible mindfulness guides. For patients who have insomnia, existing sleep trackers could provide important information for an HCP about when his or her patient is going to sleep and is waking up and how disturbed their sleep cycle is. In healthcare settings, HCPs are often limited to what they see and hear in weekly, 50-min sessions, and encouraging patients to take advantage of the technology that many already own could lead to improved healthcare. Some benefits of mHealth include low start-up cost, potential for real-time data collection, feedback capability, relevance to multiple types of populations, flexible payment plans, and increased dissemination capability.

Smartphones are the most popular mobile devices used in mHealth interventions because they are accessible, inexpensive, convenient, and easy to use. What was once a model for causal communication, cell phone texting has become a valuable tool in clinical settings. Cell phones have also become more widely accessible to low-income populations due to the provision of affordable option plans and unlimited mobile texting [69]. In a study conducted with Medicaid patients and other insurance holders, Medicaid patients were more likely (79 %) to use text messages than those who had private insurance (65–68 %) [70]. This finding reflects that texting might be a promising tool to target the needs of low-income populations and decrease health disparity. The bidirectional sharing of information and dialogue with HCPs facilitates patients playing an active role in their care. This paradigm shift towards patient-centeredness in healthcare is promoted with technologies such as mHealth that encourages patients to engage actively in sharing. Strong patient-provider communication has been associated with increased patient satisfaction, increased compliance, and improved treatment outcomes [71].

In an effort to improve health, the US Department of Health and Human Services (HHS) evaluated existing initiatives of texting and its effectiveness to promote

[11] Meeker M, Devitt S, Wu L. Internet Trends. Morgan Stanley, 12 April 2010: http://www.morganstanley.com/institutional/techresearch/pdfs/Internet_Trends_041210.pdf.

[12] Mobile Internet use nearing 50 %. BBC News, 31 August 2011: http://www.bbc.co.uk/news/technology-14731757.

[13] NHS direct mobile app used 1 million times. Posted on 11 November 2011: http://www.nhsdirect.nhs.uk/News/NewsArchive/2011/MobileAppUsed1mTimes.

health. Females, particularly single mothers (30 %), experience higher rates of poverty and disparity of healthcare services [72]. One promising program addressing this disparity has been Text4Baby which provides pregnant and new mothers free health advice text messages in English or Spanish to promote health among mothers and babies. Other programs or initiatives are TXT4Tots, SmokeFreeTXT, QuitNowTXT, SmokeFree Moms, and Health Alerts On-the-Go [73]. Females, particularly single mothers (30 %), experience higher rates of poverty and disparity of healthcare services [72]. Using IT with this population is an innovative way of bridging disparity gaps.

A substantial body of research has shown that text messaging programs can bring about behavior change to improve smoking cessation [74–76], weight loss [77–79], and treatment compliance for both medication adherence [80] and appointment attendance [81, 82]. Some mHealth approaches have also shown success in diet and physical activity interventions in adults and children [83–85]. Literature demonstrates that certain groups have poor treatment compliance [16, 86]. These IT tools might be invaluable to target these populations and close the gap of health disparity, though further research since the evidence is limited [87–89].

Currently, there are many apps available for health prevention and well-being, but the Federal Drug Administration (FDA) has no regulations for these apps and, therefore, most of the services have not been scientifically tested to ensure effective outcomes. Providers should use and promote these apps as self-help resources and take cautionary steps to minimize any type of risk(s) to patients' safety and/or well-being (Table 16.1).

Table 16.1 Mental Health Apps available for smartphone(s)

App Name	Description
AAC Autism myVoiceCommunicator	Autism communication aid
Autism/DTT Colors Full	Autism, attention deficit disorder (ADD), attention deficit hyperactive disorder (ADHD), and discrete trial training (DTT)
Breathing Zone: Relaxing Breathing Exercises	Relaxation and stress relief through therapeutic breathing
Cope with Bereavement	Hypnotherapy, coping
Depressed	Depression
Depression Consultant	Depression
Depression Cure: The Free 12 week course	12-step depression treatment
Depression Test & Tracker	Depression assessment and tracking
Digipill: Change Your Mind	Psychoacoustics to attend to depression, stress, weight, smoking, anxiety, etc.
DOD Self Helpline	Sexual assault
DREAM-e: Dream Therapy	Dreams
Eat, Sleep & Be Thin Hypnosis	(Self) Hypnosis, weight loss
iCBT	Cognitive behavioral therapy, stress, and anxiety

(continued)

Table 16.1 (continued)

App Name	Description
Inner Balance	Stress
Know thyself free psychology	Depression, panic, and emotional evaluation
Live Happy	Depression
Marriage and Counseling	Marriage counseling
Men's Psychology	Men's psychology improvement
Mental Fitness	Subconsciousness
Mental Health Assessments	Mental health assessment (surveys)
Mental Workout	Meditation and stress
Middle School Confidential 2: Real Friends vs. the Other Kind	Emotional and Social Issues
Mood Tuner	Stress
MoodBender	Re-energizing
MoodKit: Mood Improvement Tools	Emotion/well-being through cognitive behavior therapy (CBT)
MyinstantCOACH(TM)	Life coaching
MyPsych	Counseling
Panic Attack Eliminator	Panic attack
Panic Attack TalkDown	Panic attack
Panic Manager	Panic attack relief
Personal Psychology Tests	A variety of simple questionnaires to help determine various psychology disorder
Pocket PCM	Process Communication Model reference
Quit Smoking Now	Smoking addiction
Relax	Relaxation therapy
Senti	Stress
Sleep Now with Dr. Holt HD	Hypnotherapy, sleeping issues
Sport Psychology Focus&Breathe	Sports psychology
Stop Smoking in 5 Days	Smoking addiction
Stop Smoking Now (Pocket Hypnotherapy)	Hypnotherapy, smoking
Stress Free with Deepak Chopra	Stress management
Surviving Depression	Depression
SWS: Grief Support	Grief
Teen2Xtreme	Health literacy for teens
Unstuck	Personal growth
Wee You-Things	Teach diversity to kids
Your Child's Social Health	Surveys and assessments common in psychology and sociology targeting child social health
Your Rapid Diagnosis: Mental Health	Mental health diagnosis
Relax and Sleep Well with Glenn Harold	Hypnotherapy/sleep
CBT-i Coach	Insomnia

Apps can be downloaded through the App Store (i.e., Apple devices) and Google play (i.e., Android devices)

Fig. 16.2 Screenshot of the Plain Language Medical Dictionary iPhone app. The few terms shown in this screenshot of the app, such as "abdomen," "ability," 'absorption," and "accelerate," remind us, clinicians, scholars, and policy makers with a professional background, how such terms that we treat as easy, simple, and self-explanatory can be a source of confusion for many other people, even highly literate people, hence the importance of such online dictionary apps and tools. For example, the word "unsweetened" could cause much confusion to diabetic patients with low reading skills, who may only recognize the "sweetened" part in "unsweetened" and skip the "un" prefix, thus leading to the opposite behavior [43] (Source: Kamel Boulos [104])

An example of an educational mobile app is the "Plain Language Medical Dictionary" iPhone app.[14] This free app converts medical language into everyday English and could be helpful for people to understand the meaning of medical terms they encounter online (Fig. 16.2).

Online Therapy

During the last decade, experts in the field have published findings that support the rapid development of online services, given their potential to reduce existing gaps between individuals struggling with psychopathology and access to treatment [90]. Currently healthcare among certain groups has been low, due to high

[14] Plain Language Medical Dictionary app: http://itunes.apple.com/us/app/plain-language-medical-dictionary/id443405990?mt=8.

premature termination and retention as mentioned earlier [15–17]. Patients avoid seeking healthcare treatment due to stigma; therefore, online therapy might be an innovative way to engage patients into treatment. Legal or citizenship status might also play a role in patient specialty care seeking. It is the collective experience of the authors that many illegal immigrants (individuals without legal citizenship) do not seek health treatment for fear of being denounced and deported to their country of origin. Online therapy might be an option to address this gap.

An additional benefit of online therapy might include cost-effectiveness. For patients paying out of pocket, web-based and/or text therapy applications convey a more affordable alternative to health treatment (i.e., Talkspace rates start at $19 per week). Other benefits for using online therapy are the anonymity, convenience, and uninhibitedness it offers [91, 92] (Table 16.2).

Some challenges on the use of online therapy are similar to those discussed for VCT. A patient who receives online treatment from an HCP who is in the same state can appeal to the state's regulatory board for any violations against either the state code or standard of practice. On the other hand, the law does not protect patients if the HCP is in another state and does not hold a professional license where the patient resides and receives treatment. HCPs need to be familiar and comply with all relevant laws and regulations when providing online services to patients across jurisdictional or international borders.

HCPs should also have a clear consent form for telehealth and an emergency procedure in place both of which include a written authority to contact identified family members(s) and other treating professionals in the patient's local area in case the HCP needs emergency backup. As with VCT, HCPs giving online therapy should use websites compliant with the Federal Health Insurance Portability and Accountability Act (HIPAA) and discuss limits of confidentiality with patients. HCPs should manage risk by adhering to their state standard of care and by using well-documented protocols [93]. See Table 16.3 for guidelines resources.

Education: Supervising Through Internet

According to the 2009 Practice Guidelines for Videoconferencing, supervision of all HCP students can be facilitated by VCT. Allowing for HCP students to obtain quality supervision using videoconferencing would benefit the field of healthcare in two major ways. First, more healthcare trainees would be able to practice in remote areas that generally lack healthcare services. Second, video supervision would allow trainees to travel to other sites to observe and learn from rare cases around the country or state without lacking professional supervision. Video supervision has the advantage of reducing costs of traveling and disseminating clinical training to minority providers that are in remote areas and could thereby increase the range of healthcare.

Table 16.2 Apps/websites providing therapy services in the United States

App/website	Description	URL
Text4Baby	Focuses on promoting maternal and child health. Provides free health text messages to new or pregnant mothers	http://www.text4baby.org
SmokeFreeTXT	Delivers tips, encouragement, and advice about smoking cessation	http://www.smokefree.gov/hp.aspx
MyTherapistNet	Website that presents legitimate therapists to the public	www.MyTherapistNet.com
Concerned Counseling	Network of online therapists based in San Antonio	www.concernedcounseling.com
Metanoia.org	Private nonprofit advocacy site that lists online therapists	www.metanoia.org
PsychCentral	Comprehensive guides to mental health online	http://psychcentral.com/
[a]Online-Therapy.com	Based on researched CBT for diverse presenting problems (i.e., depression, anxiety); includes daily contact with therapist using worksheets plus access to therapist live chat	http://www.online-therapy.com
[a]Lantern	Programs based on cognitive behavioral therapy and are built in partnership with experts at Stanford University, Penn State University and Washington University in St. Louis	https://golantern.com
[a]BetterHelp	Can be used from any device that has a web browser. It can be a computer, tablet, or smartphone. There is no special hardware required and you don't need to install any software	https://www.betterhelp.com
[a]Talkspace	Introduces Unlimited Messaging Therapy™, Video Therapy, and Couples Therapy. Promotes affordable rate(s) and confidential and anonymous therapy via smartphone and/or computer	http://www.talkspace.com

[a]Currently considered *unofficial* Telemental Health and/or mHealth service providers in the United States

Table 16.3 Telemental Health Resources

American Academy of Child and Adolescent Psychiatry	Practice Parameter for Telepsychiatry with Children and Adolescents (2008)	http://www.aacap.org/galleries/PracticeParameters/Telepsychiatry.pdf
American Psychological Association	Ethics Committee, APA statement on services by telephone, teleconferencing, and Internet Telehealth 50-State Review (March, 2010)	http://www.apa.org/ethics/education/telephone-statement.aspx http://www.apapracticecentral.org/advocacy/state/telehealth-slides.pdf
Videoconferencing-Based Telemental Health	Practice guidelines	http://www.americantelemed.org/i4a/pages/index.cfm?pageID=3326
National Association of Social Workers and Association of Social Work Boards	Standards for Technology and Social Work Practice	http://www.socialworkers.org/practice/standards/NASWTechnologyStandards.pdf
Ohio Psychological Association	Telepsychology Guidelines	http://www.ohpsych.org/resources/1/files/Comm%20Tech%20Committee/OPATelepsychologyGuidelines41710.pdf
University of Colorado Denver	Telemental Health Guidelines	http://www.tmhguide.org/
Administration Office of Telehealth	Health Resources and Services	http://www.hrsa.gov/ruralhealth/about/telehealth/
Department of the Army	Utilization of Tele-Behavioral Health Services	https://www.qmo.amedd.army.mil/credentialing/09_042.pdf
American Telemedicine Association (ATA)	Telemedicine Health Guidelines	http://www.americantelemed.org/resources/telemedicine-practice-guidelines/telemedicine-practice-guidelines/clinical-guidelines-for-telepathology#.Vd8M_-kn3wx
British Psychological Society (2009)	Provision of Psychological Services via the Internet and Other Non-direct Means	www.efpa.be
Canadian Psychological Association (2006)	Telemental Health Guidelines for Canada	http://www.cpa.ca/aboutcpa/committees/ethics/psychserviceselectronically/
US Department of Health & Human Services	Centers for Medicare & Medicaid Services	http://www.gpo.gov/fdsys/pkg/FR-2011-05-05/pdf/2011-10875.pdf

Ethical Considerations in Using IT

IT has many advantages in closing the gap in heath disparities but also posits many ethical challenges. HCPs need to develop technology proficiency to discuss risks and ethical controversies that may arise in treatment with patients. HCPs have major responsibility to take all reasonable action not to harm patients. Some general concerns with the use of IT are confidentiality issues, patient safety, informed consent, risk management, and licensure issues. Only programs compliant with the Federal Health Insurance Portability and Accountability Act (HIPAA) should be used when using technology for health services. HIPAA gives patients rights over their health information and sets rules and limitations on who can view and receive their health information. HCPs must take reasonable measures to protect sensitive data and discuss with patients the risks of breach of confidentiality. HCPs should also encourage patients to be cautious and diligent with the information they are able to keep in their personal devices. Security measures should be in place to ensure privacy. Text messaging encryption measures and password protection are recommended to ensure the integrity of the data. HCPs needs to be aware that Skype is not considered HIPAA compliant as it does not provide a secure system to store transmitted information [94, 95]. Most health and medical licensing boards seem to agree that an HCP should be licensed in the jurisdiction where the patient is located. In addition, emergency procedures should be in place for locating a patient's local police and hospitals when providing VCT or online treatments. Healthcare providers should have a backup plan in case there is a connection problem and discuss a protocol for when emergency arises.

Technology is moving more quickly than the research that informs health providers. By the time the research process is ready to support dissemination of the intervention to larger populations, the technology tested may have become obsolete [96, 97]. This posits challenges to regulatory bodies' ability to keep pace with rapid innovations in technology [96, 97]. The code of ethics in different health professions does not directly address specific types of technology, so the professionals themselves are charged with the responsibility of making ethical decisions. Novel ethical dilemmas might be a reflection of the new emerging technologies. Nonetheless, the advantages of using innovative IT tools to increase health equity challenge HCPs to think critically on ways to minimize ethical risks while promoting patients' well-being.

Future Directions

Scientific literature has demonstrated that IT provides the opportunity to bring more services to underserved populations but more research is needed to understand what kinds of services and what technologies are likely to be most useful with specific populations. As this new generation of digital natives moves into the future, we will expect an

increase in the use and demand of technology in the healthcare arena. We must navigate this water ethically and responsibly and incorporate technology in professional and academic trainings. The rapid changes and inclusion of new technology tools in the healthcare setting merit constant education from HCPs, researchers, and patients.

In the United States, there is a shortage of bilingual and bicultural HCPs available to serve limited English-proficient patients [98]. The United States is a nation that is increasing in diversity, and by 2050 it is expected that 82 % of US growth will be attributed to Latinos [99]. In 20 years, one in every three persons will be Latino, hence, there is a lack of Latino HCPs [98]. Using distant-learning technology might be a viable way to reduce costs and promote training diverse populations to serve the needs of the country. In many hospitals today, HCPs use translators through a phone call system. Instead, it might be more efficient to use an HCP that has the appropriate training and competencies to treat a patient from distance. Training and supervising HCPs through remote electronic media are an effective way to reduce costs of traveling; increase quality training; increase racial, ethnic, bilingual, and other minority providers; and increase collaboration between HCPs from different state jurisdictions and countries. This can be viable if the field moves towards a national and international worldwide license promoting international health collaborations. IT can be instrumental in promoting international collaboration that can enhance the understanding of diverse populations. Authors suggest that leveraging technology for health is critical for ethnic minorities as well as special populations.

Furthermore, just because we live in a digital era, we cannot assume that all children, adolescents, and adults are literate in technology; literacy seems to be affected by social determinants such as ethnicity, race, gender, and available resources. If we want to promote patient-centered care among the underserved and increase their access to quality services, we need to provide basic education on technology and low-cost access to Internet or technological devices such as smartphones, tablets, or computers. Otherwise, the gap will increase due to lack of education and economic challenges. Technological education should be part of all schools' curriculums, as well as graduate training programs for HCPs.

The lack of technological health literacy in experienced HCPs (digital immigrants), who are often professors, consultants, or supervisors to medical and health trainees, may limit them to adequately address online problems that occur to them or their younger colleagues and trainees. Therefore, in order to proficiently navigate the new technology to better serve the needs of our population, we need to pursue regular continuing education to keep up with the ever-changing landscape, and we also need to include technology literacy in the curriculum of health graduate programs.

Summary

In this chapter the authors make the point that IT can be an innovative way to foster health equity in ethnic and racial minorities, disenfranchised populations, and VIP populations, as well as other populations discussed in previous chapters. As

demonstrated in the literature, technology can be instrumental in the improvement of healthcare quality and reduction of health costs, stigma, and health disparities in vulnerable populations [100]. The different IT tools discussed in this chapter can be promising resources in addressing and alleviating the barriers to healthcare access and treatment vulnerable populations face [59, 60].

IT has the ability to reach out for broader audiences, to bridge physical distances and cultural differences, and to make information more accessible. Making information more accessible and self-directed learning more common and convenient can encourage patients to be active participants in their care. By activating and empowering patients, the cultural stigma surrounding healthcare is decreased [101]. As indicated in the literature, the majority of the vulnerable population is characterized by low levels of education, economic challenges, and impoverished environmental conditions [102, 103]. The use of IT tools with underserved populations might be the solution to improve quality of life and health in this and other diverse populations.

Another advantage of IT is the potential to facilitate research through the use of different tools such as EHRs, apps, and social media. Gathering large data sets in systematic ways can improve our understanding of the effect of contextual factors, genetics, and behavioral factors on the health of diverse populations to improve health equity.

On the other hand, IT brings a new language that HCPs who are mainly digital immigrants need to learn and understand. In order for the underserved to understand and use eHealth technology, we need to provide and increase eHealth literacy education among patients and HCPs. Technology has become a ubiquitous part of life in the twenty-first century, and it is our responsibility to become competent in the use of IT and help our patients navigate the new challenges and benefits of IT. Nonetheless, HCPs must also be aware of the ethical and legal challenges of levering technology for health equity. Furthermore, research on the topic of IT and health disparities are limited, but the authors believe that technology is the future bridge in medicine to decrease health disparity in vulnerable populations.

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