Chapter 11
Digital Medicine:
The Quality Standpoint

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ABSTRACT

Individualizing care must take into account the diversity of patient values and perspectives while attending to the specific needs of people must take into account the multifaceted nature of culture. Digital medicine enables digital proximity and self-care, challenges the traditional paternal model of medicine, reshapes the nature and expectations of health care delivery, emphasizes the active involvement of patients and has an enormous potential to empower patients. Moreover, the concepts of bio-objects, cultural competence, and patient-centered care could be apparently thought on a continuum with one pole representing the bio-objects and the other representing one of the health care quality dimensions, patient-centered care. All-embracing, digital medicine affects the core values of cultural competence, which are shared by patient-centered care, one of the health care quality dimensions.

INTRODUCTION

Ubiquitous computing is a concept coined by Mark Weiser in 1988, who largely defined ubiquitous computing and sketched out its prime concerns. He also stressed that the increase of processing power would necessitate understandings of social, cultural and psychological phenomena. Overall, there is not a single definition for ubiquitous computing but a taxonomy of its features. However, it is described as pervasive computing, ambient intelligence, ambient media, and everyware. It also touches on a broad spectrum of research topics, including:

- Mobile computing.
- Mobile networking.
- Context-aware computing.
- Sensor networks.
- Human-computer interaction.

- Artificial intelligence.
- Distributed computing.
- Location computing.

With progress in technology and data communications, ubiquitous healthcare systems such as mobile health applications are becoming the quickest solution to the overwhelming problem of the healthcare system issues. In addition to easier management, ubiquitous technology has the potential to motivate users to take an active role and manage their conditions. Likewise, wearable health monitoring systems integrated into a ubiquitous mobile health system (mHealth), emerged as a technology of choice for ambulatory monitoring. They facilitate continuous monitoring, optimal maintenance of a chronic condition or computer assisted rehabilitation.

The first generation of ubiquitous systems used wearable computers that were integrated into clothes or worn on the body. However, the need for ubiquitous connectivity and unification of multiple devices on a single platform created the need for smartphones. Furthermore, health and medical apps are one of the newest developments in the digitizing of health and medical information. The evolution and mass access to the Internet led to a proliferation of health and medical websites and online discussion groups. The first websites were mostly static, infrequently updating their information offering little opportunity for sharing of information by patients or contribution of experience details.

Technological advances in low-power integrated circuits have also facilitated the design of Body Area Networks which integrate, lightweight, low-cost intelligent sensors and networking platforms. They connect nodes attached to the body surface, implanted into the body, or dispersed in clothing. From this angle, context-awareness, in Body Area Networks, describes the system capability to understand the user's state and change its behavior. Current technology provides context awareness, such as light, noise level, position, proximity, activity, social interaction, connectivity, and GPS location.

On the whole, the health and medical apps currently span an ample range of content sophistication. Many provide information on a specific medical condition or treatments while others involve highly detailed anatomical visualizations or assist in diagnosing, identifying risks, self-tracking fitness, and self-care. An assortment of apps that are currently on the market includes versions of medical training and education. They accommodate:

- Detailed anatomical and visual information.
- Digital versions of medical dictionaries and textbooks.
- Drug prescribing information.
- Training videos.

As a result, the digital technologies that emerged in the past decade have augmented the access opportunities and the sharing of health and medical information. Moreover, they offer patients the opportunity to be responsible for their health and engage in self-monitoring and self-care practices (Lupton, 2013; Sosnowy, 2014; Greenhalgh, 2012). Patients can describe their experiences, rate healthcare providers and medical treatments using social media platforms, and create and upload images or videos. Moreover, these apps have proliferated in recent years as part of a constellation of current digital health technologies which generate knowledge about healthcare, health behaviors and disease patterns (Lupton, 2014). However, social analysts have yet to commit energy and thoughts to the role played and the contribution of health and medical apps to the digitized landscape taking into account the issue of medical information

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