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IT, telecom innovations fuel healthcare accessibility

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Conventional solutions to address health related problems worldwide have been rising enormously. In many cases the healthcare providers are not able to provide treatment because of accessibility problem in many regions. Therefore, in current scenario, the need of the hour is innovation from latest technologies and this is where internet-based innovation from digital and social media comes into play.

In recent years, most of the pharmaceutical giants have been moving to reinvent their business models due to many challenges faced by them and it includes providing low priced medicines, patent cliff, and demographic challenges faced by these pharmaceutical giants. This has lead to the entry of large information technology (IT)-based companies, mobile-based healthcare firms who have been recently very active in healthcare mobile sector.

Socialization of healthcare via mobile (mHealth)
There has been a mobile revolution as to how smartphones with different software platform are used by consumers to access global information and how individuals share information on a click of a button. The software platform provides basic services such as networking and database for mobile apps to run. The usage of smartphones by all age groups has penetrated very deep in today's society. In addition, currently healthcare data being generated is interconnected with cloud-based technologies, such as search based, location based, communication based and social capabilities that make healthcare mobile applications more interactive for healthcare patients worldwide. According to Google, by 2015 there will be one mobile phone for every person on earth.

Currently, increased consumption of mobile technologies which is offering a lot of indispensable features are very valuable for electronic-health (e-health) applications seeing the current user lifestyle. Therefore, e-health based mobile applications have gained worldwide acceptance and more commonly termed as m-health (mobile-health) apps. According to a recent report, market for mHealth app services is estimated to reach $26 billion by 2017 as the mHealth industry enters the commercialization phase.
mHealth applications provide caregivers, patients, health professionals and healthcare consumers various tools, processes, and communication means to support electronic healthcare practice. Apple's iOS platform and Google's Android have centralized app stores. However, Apple's App store has been the number one app marketplace in current times in terms of the number of apps available.

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In addition, many mHealth application developers preferred choice has been Apple's iOS mobile devices such as iPad, and iPhone which provides user experience as number of mHealth apps quickly increasing in Apple's App Store. Other major platform providers are Nokia with its Symbian OS, RIM with its Blackberry OS, and Microsoft with its Windows mobile OS family and the Latest being Windows Phone 7. The platforms can subsequently be used as a basis to develop new applications for specific purposes. Generally the mHealth application framework helps to cut down on medical equipment costs and from patient's point of view, it reduces use of medical facilities by implementing novel methods that provide accurate diagnosis and targeted therapy.

Apple's App Store distributes mHealth applications in two categories, wherein one is 'medical' and the other category is 'healthcare & fitness.' Examples for mHealth apps include management of BP (blood pressure) by utilizing wearable intelligent sensors and personal healthcare information systems.

Exemplary patent scenario
With lot of technological developments, this field has resulted in a wide range of patents being filed, covering various aspects of such applications. For example, CellTrak Technologies holds two granted patents US Patent 8019622 and US Patent 8380542 on mHealth Apps for home healthcare workers. US Patent 8019622 titled "Home health point-of-care and administration system" was granted by USPTO on September 13, 2011. The patent specification discloses a home health point-of-care and administration system. The mHealth app solves key important problems such as staff scheduling, tracking and travel management, visit record and care plan administration, and communications faced while providing home healthcare workers.

The mHealth application provides improved monitoring, reporting, data communication, and tracking of information relating to field service personnel such as visiting staff in the home healthcare field. US Patent 8380542 titled "System and method for facilitating outcome-based health care" was granted by USPTO on February 19, 2013. The patent specification discloses that the caregivers and the entire care team can see the results of assessments in real-time and make changes to the care plan provided to the patient. A care plan can be changed just as quickly as assessment results are gathered. The care team no longer needs to wait for information to be manually entered into a system because this process has been eliminated.

The mHealth app allows the care team to access in real-time a patient's health record simultaneously. The care team may also be able to access other records of the patient, such as a personal healthcare record that is owned and maintained by the patient. The mobile application integrates home health point-of-care mobility and administration system that enables efficiencies with scheduling, staff management, time and attendance, GPS and directions, and delivering a patient specific care plan at the point-of-care.

More recently, Happtique has filed mHealth app for patent protection before USPTO. The patent specification has been titled "provision of a mobile health product" and published as US20130066650 on March 14, 2013. The mHealth application provides a mechanism to healthcare providers to recommend and, prescribe mobile health product apps to patients' smartphones and tablets, or refer them to Apple store to help the patients manage or alleviate their conditions.

Ethical and legal issues

As these healthcare applications involve personal data related to healthcare, Food and Drug Administration (FDA) is trying to regulate the mobile app sector. There are numerous confidentiality and privacy issues in social media which needs to be legalized to draw a line between what data is ethical to share over a communication network. Moreover, some medical applications could cause serious risks to consumers if they do not work as they ought to work. However, FDA has already cleared few mobile medical apps used by health care professionals, such as a smartphone-based ultrasound and mHealth application for iPhones and iPads that allows doctors to view medical images and X-rays.

FDA had issued its Draft Guidance on Mobile Medical Applications in July 2011. In the guidance, the FDA stated that it would apply its regulatory requirements to a subset of mobile health apps and FDA uses the term "mobile medical applications" that both: (1) meet the definition of a "device" under Section 201(h) of the Federal Food, Drug, and Cosmetic Act; and (2) were "used as an accessory to a regulated medical device" or "transform a mobile platform into a regulated medical device." However, a final guidance document from the FDA in expected to come soon for the regulation of mobile applications.

In May 2013, the FDA made its first inquiry into a urinalysis medical app. Biosense Technologies uChek system's mobile app lets users check levels of protein and other substances in their urine. The smartphone app relies on users, to dip test strips in urine and use the smartphone's camera to allow the system to processes and generate automated results.

Conclusion

mHealth applications are interactive, easy to use, and functionality aspect is well taken care off by the mobile application developers and will continue to play a vital role in providing affordable healthcare solutions. In addition, mobile-based healthcare applications provide improved efficiency, portability, convenience and will help patients to improve and get better healthcare monitoring. Moreover, using mHealth apps in daily routine can help to control common old ages diseases like blood pressure, diabetes and indirectly promote users to change their lifestyle under continuous monitoring of the mHealth apps. mHealth apps, therefore, provide affordable healthcare for both urban and rural populations.

However, the need of the hour is balancing act between patients' medical data being shared over internet with physicians in a secured environment on one hand and the privacy data and security issues associated with medical data to be handled effectively is a challenge in the current scenario where tonnes of data are being generated on a daily basis. Therefore, policymakers worldwide while formulating the laws and regulations should keep in mind these points and take precise well planned steps to achieve the balancing act.