

Digital Health: The Dawn of a new era in healthcare

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Technology has revolutionized almost all the sectors, healthcare being no different. This convergence of technology and healthcare has opened up a whole new world of possibilities which promise to improve the quality and efficiency of various healthcare services.

Technology for transforming healthcare

Scientists, healthcare providers, technology giants across the globe have come up with new and exciting ways to apply digital technology in healthcare to make lives easy and better. With new technology advancements, healthcare and treatment is becoming cheaper and more accessible.

"The healthcare industry is realizing the potential of digital technologies, with the usage of tools ranging from smartphones and tablet computers to remote sensors and monitoring devices to deliver care, information, and support to patients where and when they need it. These technologies play a key role in closing communication gaps between providers and patients and building new care models that enable patients to get care in the most convenient, cost-effective ways. Leading

healthcare organizations have started using smartphone technology and remote monitoring devices to detect changes in patients' conditions and offer real-time feedback. Technology Enabled Care (TEC) - telecare, telehealth, telemedicine, mHealth, digital health and eHealth services have and will drive the healthcare domain in the future," said a spokesperson from Cisco.

According to Mr Dinesh Chindarkar, co-founder, MediaMedic Communications, "Smart phones have presented thousands of health apps that enable users to track their health minute by minute. All types of diseases have some or the other value added apps and have become a part of our lives. With increasing smartphone penetration and usage it is further going to boom. Telemedicine is one more area that helps doctors connect with their patients no matter where they are. In the rural sector this has larger implications. With an increasing use of internet and smart phone, patients now find it easy to access to various doctor specialities without wasting precious time."

People are more aware of their health today. Health-related information is more easily available. Earlier, ways to measure health parameters were only available with a doctor or at a hospital, but now information is available on mobile phone. In addition, hospital visits take time and can be inconvenient. Cost of healthcare is also rising. It is becoming increasingly important to detect early and take preventive care.

"Devices are needed to measure parameters and process applications that help keep track health on an ongoing basis. But patients are reluctant to enter data either because it is cumbersome or they find it a chore to do - on an ongoing basis. Thus there is a need for an integrated system where things are measured on their own without patients' having to bother entering data all the time. Weight is just one of the parameters; calories, glucose levels are some of the other indicators that need to be tracked," said Mr Dalip Singh Negi, VP - Engineering, Portea Medical.

Innovations in the health technology

The innovations in the health technology has grown leaps and bounds in the recent times. Wearable devices such as smart watches, health patches to monitor patient's vitals, glucose monitoring system to high tech innovations such as state-of-the-art prosthetic limbs have all hit the market. Further, remote patient monitoring through mobile health technology promises to deliver quality outcomes at lesser costs and reduced time. Augmented and Virtual reality are simplifying & revolutionizing healthcare in a big way.

"Technologies include those that are directly accessible on a mobile device such as BP monitors and those solutions that enable mobile healthcare delivery. The next level of innovation will be around using sensors in mobiles to measure parameters. Mobiles with high magnifying cameras can be used in conjunction with an app to perform optical tests. Next level is to move away from external devices and use a good camera and mobile to do any tests which is non- intrusive," said Mr Negi.

With the usage of mobile devices, wearables and electronic records healthcare providers have access to information in real time which improves the health care provision. With the help of technology, it is easier to collect and integrate data from these devices resulting in quick and better services.

"The coming years are expected to witness greater deployment of tools such as telemedicine, teleradiology, Hospital Information Systems (HIS)/ Hospital Management Information Systems (HMIS), online or Electronic Medical Records (EMR), etc," said Cisco.

Adoption of new technology in healthcare

Healthcare has been a little traditional as an industry but technology adoption is picking up steadily. Technology has trickled down to building intelligent infrastructure for the healthcare service provider, with open interfaces, and helps them improve network security, reliability, simplicity and innovation at an unprecedented scale.

"Various healthcare players have effectively used technology - look at the hospital segment who has changed the way healthcare is delivered. Recent time-bound organ transplant cases in India could have never been thought about without technology. Newer devices, lateral thinking and the young Indian digital natives will further revolutionize technology adoption in the time to come," said Mr Chindarkar.

According to a recent report by Nasscom, the Indian healthcare IT market is valued at \$1billion and is predicted to grow about 1.5 times by 2020.

"Internet of Things (IoT) and Big Data analytics will continue to drive adoption of digital technology in the healthcare sector, as increasing penetration of wearable gadgets, the customer's proactive approach towards health, and vast data generation

helps enterprises to study and explore new market opportunities. For this sector, the next few years will be critical in order to integrate data from legacy systems and new-generation IoT devices into a connected platform to enhance functionality and minimize errors that will deliver a seamless experience to clinicians and patients," said Cisco.

However, there are a few barriers which stops digitization, points Mr Negi. He said, "Innovation is still being driven by the US and the costing is based on this and devices are getting manufactured in developed markets, adjusting costs to the local environment is still a factor. Also, in India, bandwidth is a huge issue. Reliability and costs are prohibitive. The reliability of power is also a question which brings up the difficulties in handling remote healthcare monitoring."

He further added, "Health consciousness is still not prevalent among the general population - Usage of devices is low. Doctors are not comfortable dispensing treatment or advice without meeting patients and vice - versa with patients still preferring the conventional method of in-person meetings."

There is also a lack of regulation and standardization. Moreover, innovation is needed on the hardware side.

How telecomm is enabling digital health

Telecommunication and connectivity is the pre requisite for any group interworking. Any work flow beyond hospital needs telecommunication. Also, in India doctor, patient ratio is very poor, here telemedicine comes to the rescue.

"Today, the technology is getting converted to three separate areas, i.e collection of basic data, transmission of the data and analysis of the data. Earlier, these three were integrated in any biomedical equipment. Now, the whole equipment chain is separating it out and this is happening so that you can have larger coverage area, lower cost and can also have the combination of multiple parameters rolled into one because you can always deploy multiple type of data collection. The one area in which telecomm plays a big role, it's called machine to machine communication where, you have sensors, health, biometric, sensors and then you are collecting all that information in a centralized place where you are analyzing it and separating out. This new workflow will have a very big impact," said Mr Vipin Tyagi, executive director, C-DOT.

He further added, "We also are talking about high-end super speciality hospitals, where sophistication has to be as par the standard of the western both in terms of connectivity of the equipment for diagnosis and also for entertainment of patients. The hospitals need high speed broadband (true broadband) for faster image transfer and also for video conferencing etc. Completely connected ecosystem is required in these kind of sophisticated hospitals."

Role of 'Digital India' in digitizing healthcare

Healthcare in our country had multiple pain points. The structural opacity and lack of access to information led to a situation where the consumer was misled by multiple intermediaries.

"With GOI's "Digital India" initiative, we believe healthcare industry will overall benefit through better access to quality information, real time connectivity with healthcare providers and greater transparency," said Dr Sanjiv Agarwal, MD & founder, Diabetacare.

Echoing similar views, Mr Chindarkar said, "Smart cities, thousands of ASHA workers working at the grass root level, telemedicine initiatives to connect villages to nearby districts providing better expertise, consumer education in native languages through messaging services, call center support all will help shape a better healthcare picture with the Digital India initiative. Especially in a country where the doctor to patient ratio is poor, this will help bridge that gap and provide affordable yet precise health solution."

There are many fundamental ways in which technology can solve a many of the problems which plagues the healthcare industry in India, says Dr Agarwal.

He added, "Through ePharmacy, eDiagnostics, eInsurance etc, consumers in different parts of the country can access medication at their doorstep through a well tracked system. This has helped strengthen the authenticity in the supply chain, ensure better access and provide convenience to the patient. This has also helped address the deep rooted issues like middlemen taking commission to procure medicines (often fake and without a bill) etc."

He further added, "Online models for healthcare, be it access to doctors, pharmacy or diagnostics ensure all the information is available at the patient's fingertips. Hence a consumer can compare prices, learn about more cost effective options and make sure they are not taken for a ride. They can also seek second opinion from doctors, get reviews or discuss their problems with people facing similar medical challenges through various online forums."

However, Mr Negi feels the larger impact will be known in the coming years as it is still early days.

In the Box:

Start-up wave in the digital health space:

Below is the list of start-ups that are leveraging the power of technology to improve the healthcare scenario in the country:

Cardiac Design Labs have developed MIRCaM, an ambulatory cardiac monitoring and diagnosing system which is capable of real-time, intelligent, and full disclosure monitoring, analysis and diagnosis of a wide range of cardiac conditions like arrhythmia, myocardial ischemia and infarction.

Cooley is an end to end health monitoring IoT platform that intends to collect (device), store, analyze and provide insights of vital signs for patients.

HealthZwealth Technologies provide innovative product in order to efficiently manage health profile. They help organize personal health records with robust safety and security measures.

Preva systems leverage identity, location, mobility and ambiance information from sensors to provide real time analytics to enterprises. They have come up with a solution to support independent living for elders.

Bangalore-based GetActive introduces fitness and sleep tracker band, a simple and accurate wearable device to track your steps, sleep, calories burnt and the distance travelled.

DUCERE TECHNOLOGIES' Lechal is the world's first haptic footwear. Offering hands-free navigation and fitness tracking, this smart footwear is uniquely interactive and intuitive.

NetMeds Marketplace Ltd. (netmeds.com) is an online pharmacy

In the Box:

Initiatives towards digital health:

In 2015, the government rolled New Health Policy (NHP). The policy increased the healthcare expenditure and proposed to enact a national health rights act to make healthcare a fundamental right.

e-Health was one of the initiatives launched with the Digital India campaign. It aims to provide effective, economical and timely healthcare services to all individuals, and especially to those people who have little access to healthcare services. This service will be linked to Aadhaar numbers, which will make getting lab reports and OPD appointments easier.

An eHospital App has also been launched with an Online Registration System (ORS). This initiative allows us to skip the hassles of registration and other formalities required at hospitals.

Ministry of Health and Family Welfare has released a concept note discussing establishment of the National eHealth Authority (NeHA) for India.