

Summer Training

A Report On

**“Assessment of the Perception of the
consumers and health providers in digital
health”**

By

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MBA - Hospital and Health Management

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PART 1
(SUMMER REPORT)

ABBREVIATIONS

- AI - Artificial Intelligence
- ICU - Intensive Care Unit
- mHealth - Mobile Health
- AAA - Anytime, Any device, Any Place
- EHR - Electronic Health Record
- App - Application
- IoT - Information Technology
- VR - Virtual Reality
- PPP - Public Private Partnership
- PCP-Primary Care Physician

ABSTRACT

The usage of digital technology has been rapidly increasing worldwide. It has already made a strong foothold in health care ecosystem and scope of its expansion in near future is too profound. It allows the production, organization and delivery of healthcare services in a better way. So Digitalization has brought not only technical change but also organizational and cultural change in health sector.

To evaluate the impact of digital health services and its adoption in different fields of health ecosystem a study should be conducted to understand their performance, achievement of health goals, consumer preferences and satisfaction.

To assess the effectiveness of digital transformation in healthcare system, a systematic review should be performed.

As consumer's demands, preferences and behaviors changes all the time, the providers and consumers must stay one step ahead of the shifts.

INTRODUCTION

What is digital Health?

Digital health means utilizing the tech innovations to improve one's health and wellbeing. It is a broad and developing sector which involves a wide range of wearable devices to ingestible sensors, from mHealth applications to artificial intelligence, from automated machines (robots) to electronic health records etc. So, it is a kind of digitalization in healthcare industry.

Importance of Digital Health :-

- "To prevent disease"
- "To help patients monitor and manage chronic conditions"
- "To lower the cost of healthcare provision"
- "To make medicine more tailored to individual needs."

It helps people improve their lifestyles to maintain their health.

Digital health tools could also help identify new illnesses or the worsening of existing ones. It not only shortens the disease period but also helps in easing symptoms at an early stage before the involvement of the healthcare provider. It improves the quality of life and reduces the total cost of a person's healthcare over their lifetime.

Types of Technologies in Healthcare System

The evolution of technological innovation in healthcare has taken the health services from the traditional way of managing hospital operations to bringing services at the consumer doorstep, by introducing new self-service gadgets to help both patients and professionals. This has made consumer life so convenient that they can do patient registration, fix appointments, data monitoring from lab tests to self-care tools. Different technological advancements in healthcare have emerged over some time some of which are as follow:

1. Artificial Intelligence

Artificial Intelligence is epitome of medical innovation. It involves expert systems like machine learning, facial detection, image identification, voice-recognition, profound understanding, smart robots and chatbots etc. AI refines the data and provide a deep understanding of cancer progression linked to genetics, environment and treatment. It can be used in ICU for supervising the patients, monitoring the patients remotely, managing chronic diseases, precision medicine, predictive and preventive medical care.

To monitor the vital signs every minute and analysing them in reality is very critical. AI helps in automation by recording and displaying the data autonomously. In Biotechnology and Pharmaceutical Companies it helps in drug discovery and shortens the drug development cycle.

2. m-Health

The healthcare industry has entered the period of digital invention as more patients are keen towards on-demand healthcare services because of their tight agendas. mHealth involves AAA i.e. Any time, Any device and Any place for the convenience of both patient and doctor and allows online interaction between them. Practitioners can take sound decisions based on complete patient's clinical history and their digitally shared medical records.

3. Telemedicine

In telemedicine patients can have their full assessment through video conferencing with a physician. It provides expert advice even in rural and remote areas and is economical for both patient and the hospital/ health care professional. They can have a quick and timely follow up of the discharged patients. Tele-specialization is widely growing these days due to Covid-19 reducing the geographical obstacles.

4. Wearable devices

Digital health has grown considerably with the introduction of wearable devices and mobile health applications which have sensors to monitor individual's pulse rate, blood sugar level, respiratory rate, blood pressure and their activity level in real time. These devices are generally waterproof. The type of data collected on these devices can be directly transferred to mobile phones via Bluetooth and can be shared with the physicians for consultations.

5. Electronic Health Record

Electronic health record is a more structured and centralized platform which provide more integrated data system in hospitals , health care systems and efficient care for patients by maintaining their medical records . EHR can be used as a population health gizmo and the data provider for the future developments in health system.

6. Self-service kiosks

Hospitals have the facilities of self-service kiosks to help the patient in expediting the hospital processes. This helps them save their time by avoiding long queues as they can self-register themselves as well as pay bills, check identifications, sign papers after discharge etc.

7. Big Data and IoT

Big data aggregates information through social media, e-commerce, internet connected bio-medical devices, online transactions, financial transactions and identifies patterns and trends for future use. Big Data & IoT can dramatically improve patient care by lowering rate of medication errors, amplify efficiencies through preventive care and reducing the cost of delivery by allocating the appropriate staff to deal with patients through its predictive analysis.

8. Virtual Reality

Virtual Reality is the wonder of digital transformation in healthcare industry. Though, new in the healthcare industry, it has the capability to treat the patients with virtual reality. The simulated training modules are developed based on different surgical situations to help doctors in pre-operative case planning, to hone their skills, for training nursing and paramedics.

VR is an efficient and safe substitute to drugs. It can be used to treat anxiety, post-traumatic stress disorder and pain etc. by distracting the patient.

VR headsets and manoeuvres can motivate and help autistic children to sail through the world.

9. 3 Dimensional Printing

3D Printing is used in making prosthetics, testing drugs, creating replicas of bones, tissues, organs, stem cells and blood vessels etc. It allows doctors to work faster with reduced patient time, gives quality care with immense patient satisfaction.

10. Robotics

Robots are the new digital advancement in health ecosystem. Surgeons can use the medical robots as their assistant to perform complex surgeries. These innovations should not be understood as substitution of the specialists rather an aid in medical industry. Humanoid robots are human-like and have the progressive robotic potential to perform complicated jobs that human hands can achieve.

RESEARCH QUESTION

What are the perceptions and expectations of healthcare stakeholder (patients and healthcare professionals) about digital health care eco system?

RESEARCH OBJECTIVE

Specific Objective:

- ◆ To assess the perceptions of the consumers and healthcare professionals from digital technology.
- ◆ To find how healthcare ecosystem is getting benefitted and impacted with this new wave of digital transformation.

LITERATURE REVIEW

1. **Walter Ricciardi et al (2019)** evaluated how digital transformation of health services helps to attain health system goals and how it is governed. They emphasized that government should have the knowledge of these new technologies in order to make decisions. The healthcare professionals should also be trained for the digital transformation.

They did mentioned that since digital transformation in health sector will focus more on customer centric self-service health apps / tech solutions, which also makes them more vulnerable to various kinds of cyber threats.

Hence, Cybersecurity should be an integral part of any health organisation to protect the hacking of sensitive patient information & skilled professional should be employed to secure the data.

2. **Roland Gamache et al (2018)** summarized the latest health informatics literature on “The bridging of electronic data to benefit communities”. They evaluated social determinants of health, surveillance practices and methods, social media and mHealth.

They concluded that big data and IoT is immensely being used in the field of health to produce and exchange digital data for identification, monitoring and improving the various factors affecting the health of communities.

3. **Milena Soriano Marcolino et al (2018)** reviewed several articles to measure “ the effectiveness of mHealth interventions in various health diseases”.

They found a beneficial impact of mobile health in managing chronic diseases and reducing the risk of deaths and hospitalization of the patients of asthma, chronic pulmonary disease, heart failure, diabetes, blood pressure, tuberculosis and HIV.

They concluded that mobile health is still in the infancy stage in developing countries.

4. **Gonza Namulanda et al (2018)** analysed case studies on Electronic health records for advance environmental public health tracking. They used EHR data of four local health departments to address several challenges and technical requirements for accessing EHR data and the core data elements required to integrate EHR data within their departments. The results of these analysis showed the necessity to define the best algorithms for public health surveillance measures using EHR data.

5. **Anna Odone et al (2019)** reflected on the efficiency of the digital tools in public health and discussed some related issues. They built a conceptual framework of usage of digital technology in different public health domains, identified digital features that encouraged the public health action, showed evidence of digital solutions and identified strategies for public health digitalization.

According to them digitalization shows a transition from cure to prevention and makes the healthcare system more competent, reliable & economical.

6. **Md Mahbub Hossain et al (2019)** evaluated the articles on current evidence of digital interventions for people living with non - communicable diseases in India and the outcome of those interventions. They suggest that low number of interventions have positive outcomes, so to ensure equitable and sustainable development of digital intervention, advanced technologies should be explored.
7. **Souvik Bandopadhyay et al (2018)** published a research paper on “What big data health research can do for a country like India and UK”. According to them potential of health analytics through bigdata research is currently not been tapped by these countries, hence collaborative efforts on bigdata research between two countries will surely bring significant advancement across healthcare ecosystem to both patients & health organisations.
8. **Luisa Russo et al (2017)** conducted a survey to know about the attitude of families of paediatric patients toward telemedicine. They investigated the sociodemographic data, clinical information, technological profile, advantages and fear of telemedicine along with the willingness to use tele visit service. They found out that most families of paediatric patients had a high technological profile and were keen to embark in telemedicine programs.
9. **Maeghan Orton et al (2018)** discussed key advancement in health service delivery, using digital health strategies for reducing human resource constraints. Digital referral and mobile clinical decision support systems has the potential to improve the quality and care of service delivery received by the patients of low- and middle-income class. They suggested that to expand the effectiveness of these services there should be a standardized way and more engagement of health workers across the health system.
10. **Paolo Zanaboni et al (2018)** provided systematic overview of “The methods used to evaluate the effects of internet based digital interventions for citizens”. Though the study showed the benefits of digital intervention and satisfaction of patients but they suggested that these digital interventions should be constantly monitored and focus on chronic diseases.

11. **Roberto Moro Visconti et al (2020)** explored the impact of digitalization on healthcare infrastructural financing. The study showed:
- a. Increase in patient centric vision
 - b. Demand for healthcare delivery services and transformation of inpatients into outpatients and eventually home patients.
 - c. Entry of non-conventional competitors (MedTech firms; m-app developers etc.)
 - d. Big data created by wearable devices, eHealth or mHealth applications provides value for money in PPP.
 - e. New technologies and telemedicine are useful even for infectious diseases like Covid -19.
 - f. This can generate extra profits to produce incremental economic and financial margins.
 - g. Many healthcare challenges can be solved with digital investment for long term sustainability.
12. **Zeeshan Ahmed et al (2020)** published an article on “artificial intelligence with multi - functional machine learning platform development for better healthcare and precision medicine”. According to them AI and precision medicine has the calibre to improve the quality and transformation of healthcare by analysing the medical data. It require more useful analytic tools and approaches for efficient networking and should deal with ethical and social issues of privacy and cybersecurity in healthcare system. Machine learning solution should be developed for clinical data extraction, storage, management and analysis to support clinicians in decision making.

RESEARCH METHODOLOGY

❖ **Data Collection** - Secondary Research

- ❖ The Literature review is done to assess the expectations and inclinations of consumer and healthcare providers towards digitization/ digital transformation.

❖ **Search Strategy:**

- The systemic literature is taken from the database - **PubMed, Google Scholar, Research Gate and Science Direct.**
- All the figures shown are collected from primary researchers from unpublished sources, all listed in references.
 - **Unpublished Sources** - Survey by Accenture, Deloitte and McKinsey
- ❖ The **keywords** used to locate the publications deemed to be relevant to the aim and the objective of this review were: **Digitalization, Healthcare, Ecosystem, Artificial Intelligence, Big Data, Telemedicine, mHealth.**
- ❖ The published research papers and articles from the year 2017 - 2020 were considered for the literature review.
- ❖ Compilation of 12 selected sources in all, was done in tabular summary to get the findings.
- ❖ The results and interpretations are based upon the literature review and the unpublished source materials from Accenture and McKinsey.

FINDINGS

TABLE OF SUMMARY (LITERATURE REVIEW)

S.No.	Title	Author/ Year	Methodology	Outcome
1	How to govern the digital transformation of health services?	Walter Ricciardi, 2019	Systematic Evaluation of articles	Cybersecurity should be integral part of health organization to protect and secure the data. Training of healthcare professionals in digital technology as the customer centric health tech solutions are more vulnerable to cyber threats.
2	The Bridging of electronic data to benefit communities.	Roland Gamache, 2018	Systematic review of literature	Big data & IoT is being used to identify, monitor & improve various factors affecting the health of communities.
3	Effectiveness of mHealth interventions in various health diseases.	Milena Soriano Marcolino, 2018	Systematic review of systematic reviews	mHealth is still at an infancy stage in developing countries.
4	Advance environmental public health tracking using EHR.	Gonza Namulanda, 2018	Case studies	The results show the necessity to define best algorithm for public health surveillance using EHR data.
5	Public health digitalization in Europe	Anna Odone, 2019	Conceptual framework and literature review	Digitalization shows a transition from cure to prevention making healthcare system more competent, reliable and economical.
6	Digital Health interventions for non communicable disease in India.	Md. Mahbub Hossain, 2019	Systematic review of intervention studies	Advanced technologies should be explored for sustainable development of digital intervention.
7	Potential of health analytics through big data in India and UK.	Souvik Bandopadhyay, 2018	literature review	Collaboration between India and UK on big data research will bring advancement in healthcare ecosystem.
8	Attitude of families of pediatric patients towards telemedicine.	Luisa Russo, 2017	Cross - sectional study, Questionnaire	Mostly High tech families were keen to embark telemedicine programs.
9	Digital Health strategies to reduce human resource constraints.	Maeghan Orton, 2018	Systematic review of systematic reviews	Engagement of health workers across the health system will expand the effectiveness of health service delivery.
10	Methods to evaluate the effects of digital health services for citizens.	Paolo Zanaboni, 2018	Systematic review of systematic reviews	Digital intervention should be constantly monitored & focused on chronic diseases.
11	Impact of Digitalization on healthcare infrastructural financing.	Roberto Moro Visconti, 2020	literature review	Increase in patient centric vision, entry of non - conventional competitors in health care sector, big data provides value for money in PPP
12	Artificial Intelligence with multi - functional machine learning platform development for better healthcare and precision medicine.	Zeeshan Ahmed, 2020	literature review	It requires useful analytic tools and approaches for efficient networking and should deal with ethical and social issues of privacy and cybersecurity in healthcare system.

RESULTS

The Source of this data is Accenture 2019

CONSUMER EXPECTATIONS FROM FUTURE OF HEALTHCARE



Healthcare consumers today are changing, and their expectations for convenience, affordability and quality are redefining how they engage at each stage of care. Younger consumers are not satisfied with healthcare's status quo and consumers of all generations are more willing to try non-traditional services. The providers and payers who heed the shifts and deliver what patients are looking for will be the ones to earn loyalty, navigate disruption and be strongly positioned as the future of healthcare consumerism unfolds.



Traditional healthcare refers to established types of service delivery—i.e., doctors and other professionals in hospitals, clinics, medical centers or doctors' offices.

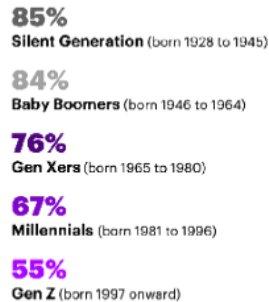


Non-traditional healthcare refers to other, emerging types of service delivery—i.e., walk-in or retail clinics, outpatient surgery hospitals, virtual health (via the phone, on video or apps), on-demand services or digital therapeutics.

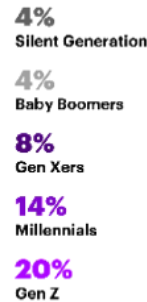
Healthcare Consumer & their Preferences

Gen Z and millennials are least likely to have a primary care physician (PCP), compared to Gen X, baby boomers and the silent generation. Some younger generations say they would like to have a PCP but have not found one that meets their preferences for affordability and convenience. Gen Z is the most likely generation to seek out wellness practices (e.g. yoga, acupuncture) beyond Western medicine. With millennials projected to become the largest generation in 2019, this generation holds the most power to influence future healthcare models.

I have a primary care physician (PCP)/GP/doctor
(i.e., a doctor I return to for regular check-ups or whenever I need basic medical care)

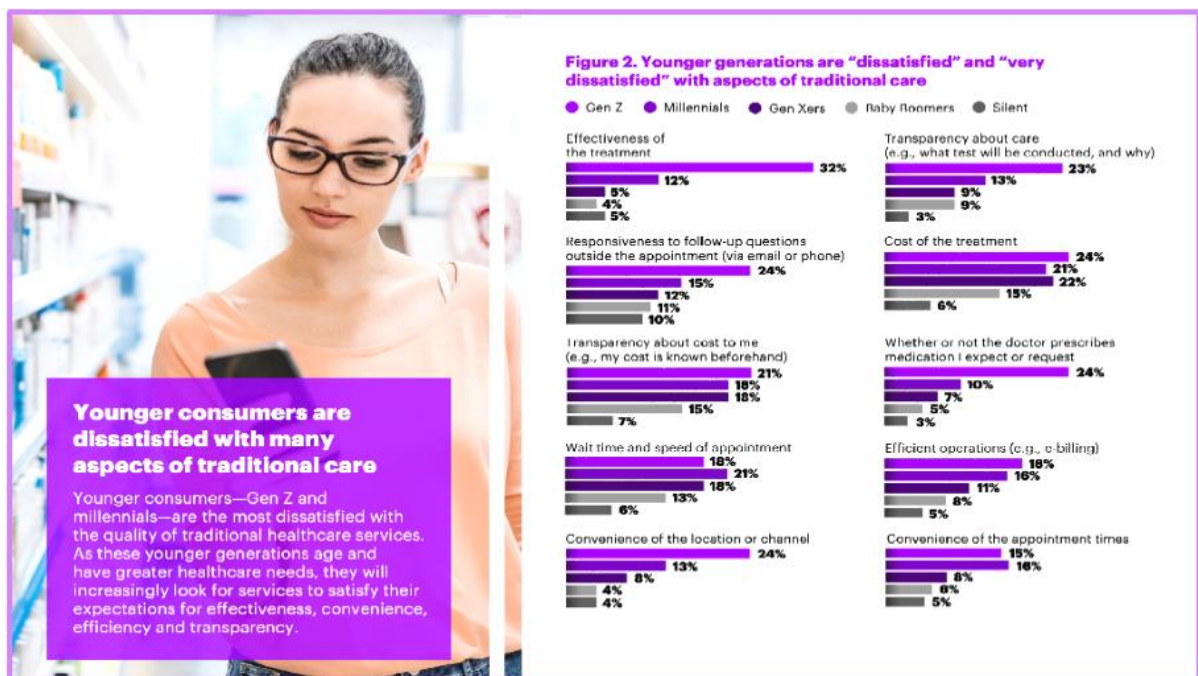


I would like to have a primary care physician (PCP)/GP/doctor but have not found one that meets my needs (e.g., affordability, convenience)



The above data shows:

1. Gen X, Baby boomers and silent generation are most interested in having primary care physician for their regular check-up or basic medical care.
2. Gen Z and millennials are least interested to have a primary care physician (PCP) but prefer to have one if their needs of affordability and convenience is met.



- The above figure shows - Younger generations (Gen Z and Millennials) are more dissatisfied from the effectiveness, convenience, efficiency and transparency of traditional healthcare services.

Influencing Factors before seeking medical assistance

Convenience is also a top factor influencing care choices

Understandably, insurance coverage is the top-ranked factor influencing US consumer decisions about where and when to seek medical treatment. Consumers also will choose care that is conveniently located, reputable, comes recommended and has short wait times, among other factors.

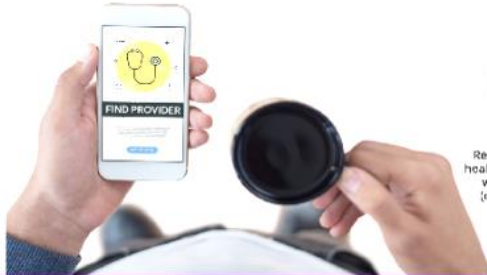
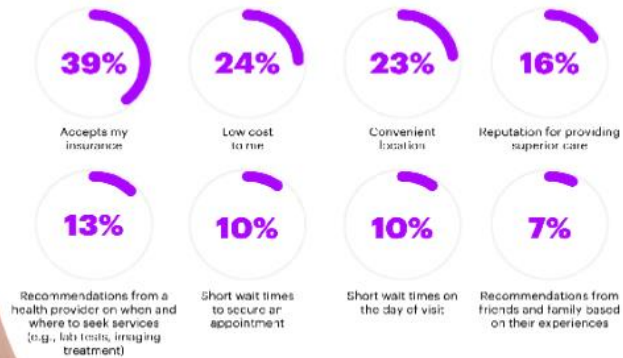


Figure 3. Consumers make decisions on when and where to seek medical treatment based on affordability, convenience and reputation



- This image displays different factors like insurance coverage, location, reputation, convenience, affordability, short wait time, recommendations from other etc. which influence consumers to seek medical assistance.
- 39% of consumers prefer to take medical services only if the hospitals cover their insurance followed by affordability (24%) & convenience (23%). 7% seek services based on recommendations.

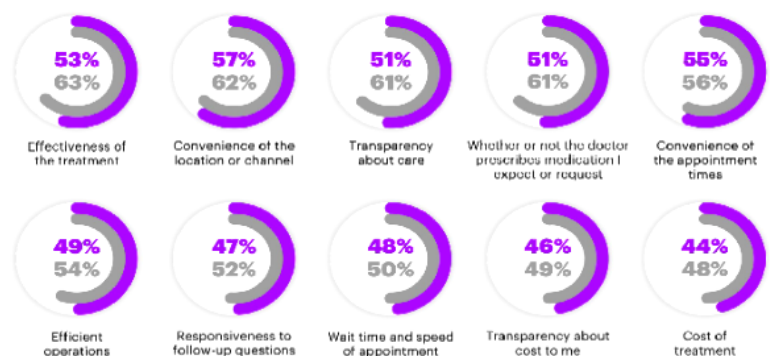


Consumer satisfaction levels are similar across non-traditional and traditional healthcare services

Patients believe the quality of non-traditional care is similar to that of traditional care. When thinking about non-traditional healthcare services, many patients are "very satisfied" and "extremely satisfied" with the level of transparency, convenience, effectiveness, efficiency and cost of those services.

Customer Satisfaction Levels

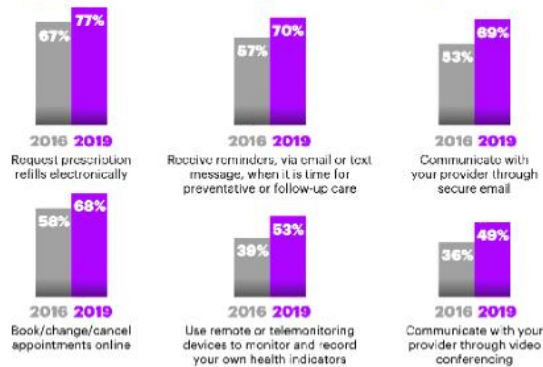
Figure 5. Satisfaction levels of those "very satisfied" and "extremely satisfied" are comparable across traditional and non-traditional



- Consumers are mostly very satisfied and extremely satisfied with the levels of transparency, effectiveness, convenience, cost and efficiency across both traditional and non-traditional healthcare services. So, non-traditional services can soon have an edge upon the traditional services.

Consumers Digital Inclination on the rise

Figure 6. Consumers increasingly will choose medical providers who offer digital capabilities



- The graph depicts a comparison of consumers inclination towards digital health services on the basis of online appointment, telemonitoring, communication through video conferencing and emails etc. from the year 2016 & 2019.
- It clearly shows the rise in the usage of digital health services in 2019.

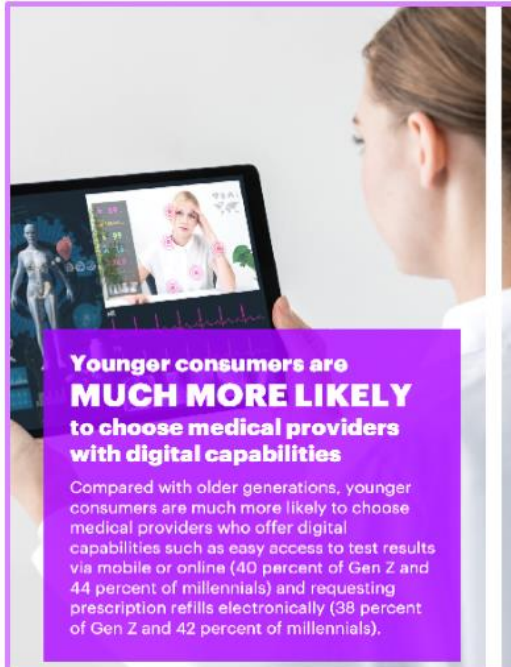
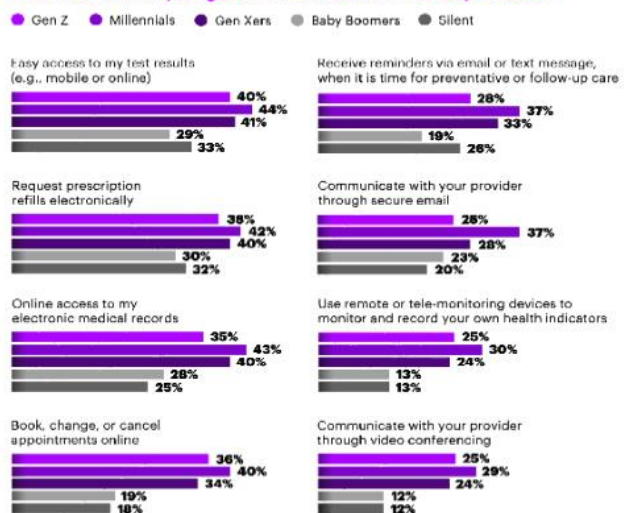


Figure 7. More than other generations, digital capabilities influence whether younger consumers choose medical providers



- Gen X, Millennials & Gen Z are more likely to prefer medical help with digital capabilities like access to electronic health record, online appointment, reminders for the follow-up & online prescription etc.

HOW HEALTHCARE ECO SYSTEM IS GETTING BENEFITTED FROM NEW WAVE OF DIGITAL TRANSFORMATION

Having a “**Digital Health Ecosystem**” will surely benefit customers from convenience, transparency & control on medical information point of view. It's been long that much needed technology revolution was required in health sector & it has significantly fast-tracked in last few years. Consumer expectations are also growing rapidly, looking at the rapid growth of other industries due to tech interventions. All these new apps bring lot of data driven analysis that helps in shaping up new strategies in health sector.

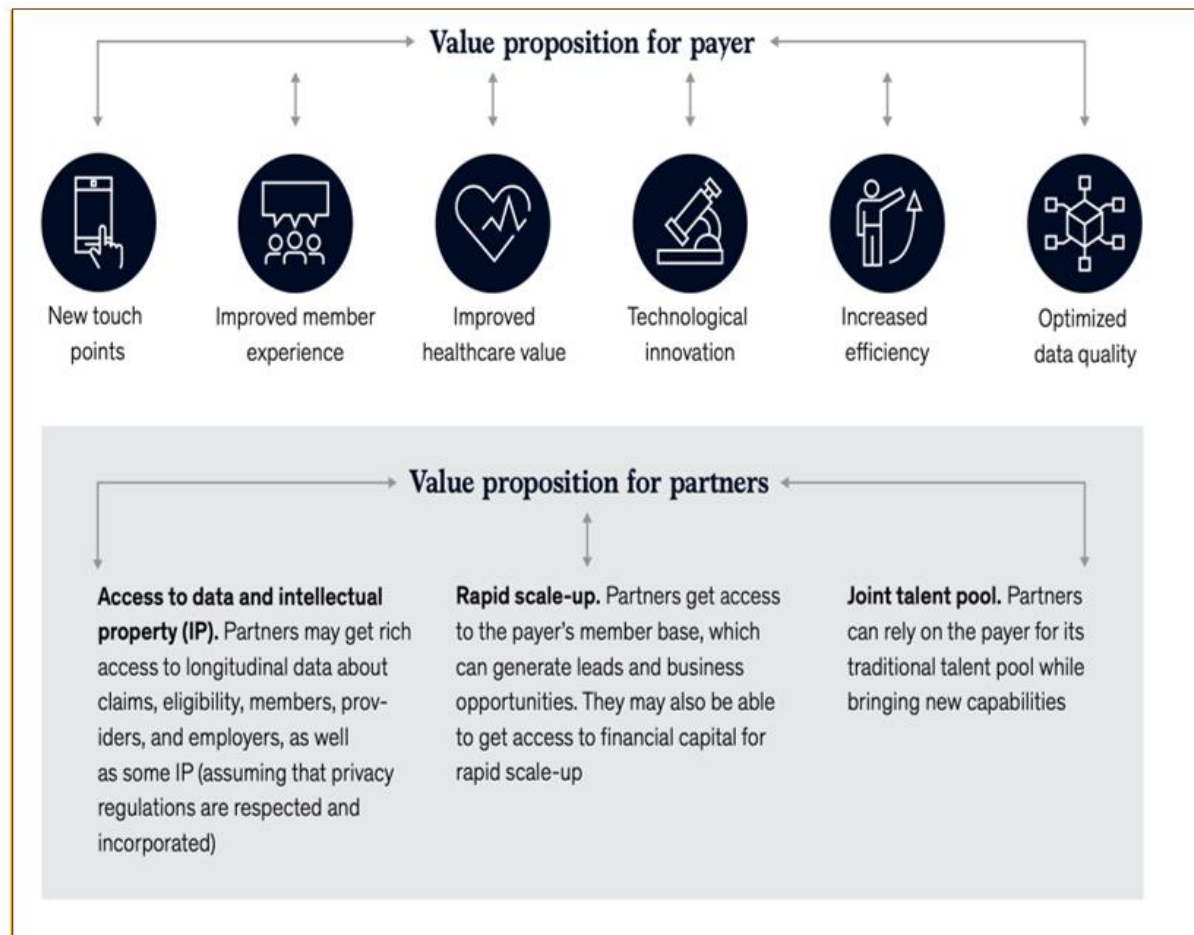
All these factors are causing disturbance in the sector, resulting in a healthcare market which demands new opportunities across the eco systems to improve internal / external customers experience. Hence setting up a “digital health ecosystem” will bring major value on the table.

Quick snapshot - Digital Healthcare ECO System

Functionalities	Key Services	Healthcare Services Details
Education and engagement	Health coach	Monitor health with fitness tracking data and receive personalized advice
	Challenges and rewards	Achieve goals each day to accumulate points, compete with friends, and redeem benefits
Screening and diagnosis	Premium check-ups	Receive information on premium health services and check-ups
	Treatment paths	Receive recommendations for treatment options and next steps based on symptoms
Access to care	Best doctor	Browse recommended doctors and make reservations with real-time availability
	Telemedicine	Have uncomplicated access to trained clinicians through video/voice calls
	Second opinion	Rapidly obtain a second opinion supported by seamless transfer of information
	Health concierge	Manage treatment pathways and have access to additional healthcare services
Care management and community	Food service	Receive dietary recommendations based on nutritional values and order meals online
	Social integration	Participate in medical social networks with content sharing and recommendations
	Community	View/read the treatment experiences of other patients and engage in discussions
Core insurance services	Financial coach	Get prediction for total treatment costs to help decide on an adequate treatment path

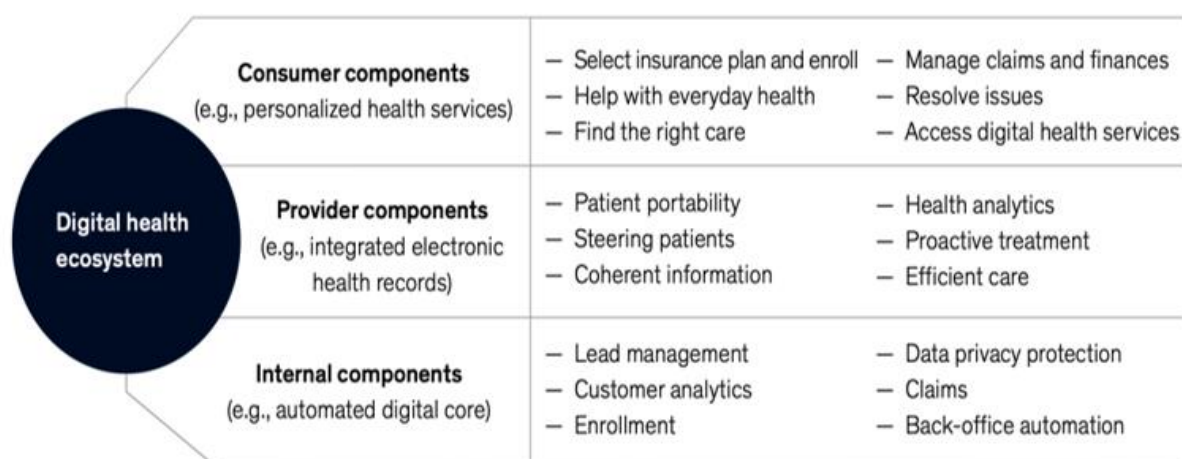
Healthcare ecosystem will provide benefits to both customers / partners:

Everyone across healthcare eco system understand true potential of digital health applications. Many consumer applications around health services like tele medicine, online registrations, setting appointments, insurance etc. are serving towards solid foundation of “digital health eco systems”.

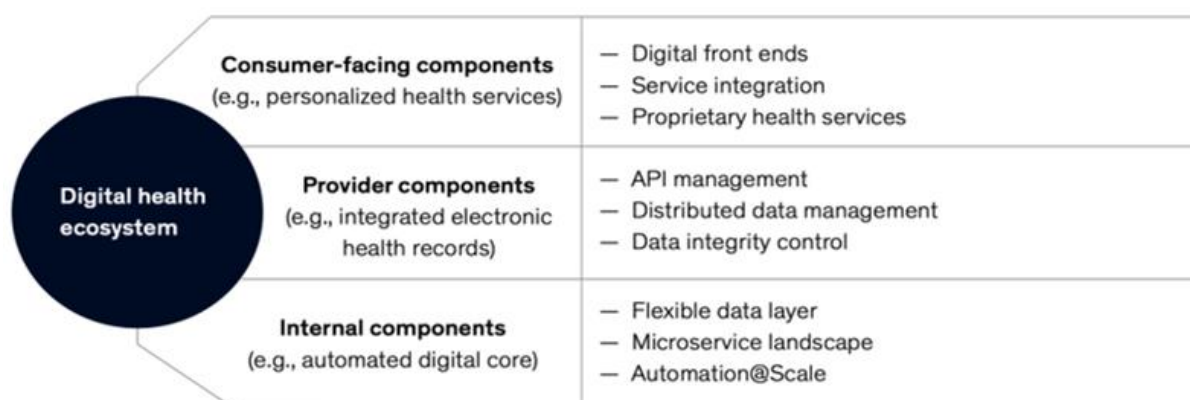


Digital health ecosystems enable administrative efficiency, lower operating costs and faster turnaround times.

Business capabilities in digital health ecosystems (core components)



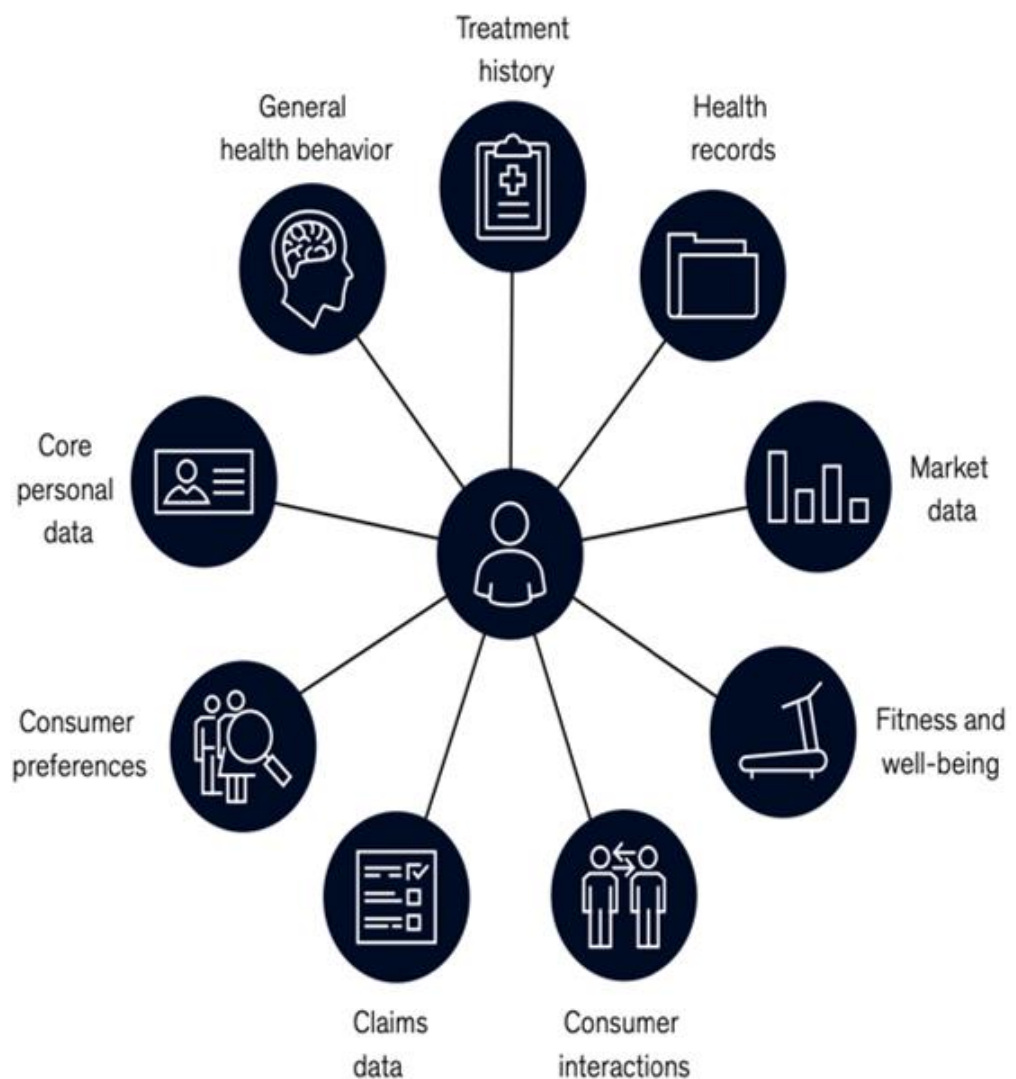
Technology foundations for core components in digital health ecosystems



Consumer centric data analytics will add value across the ecosystem

Healthcare data from eco system applications provides an opportunity to do detailed data analytics & prepare various trends to enhance patient health & suggest cost effective treatment plans.

A consumer-centric model for data analytics can deliver value

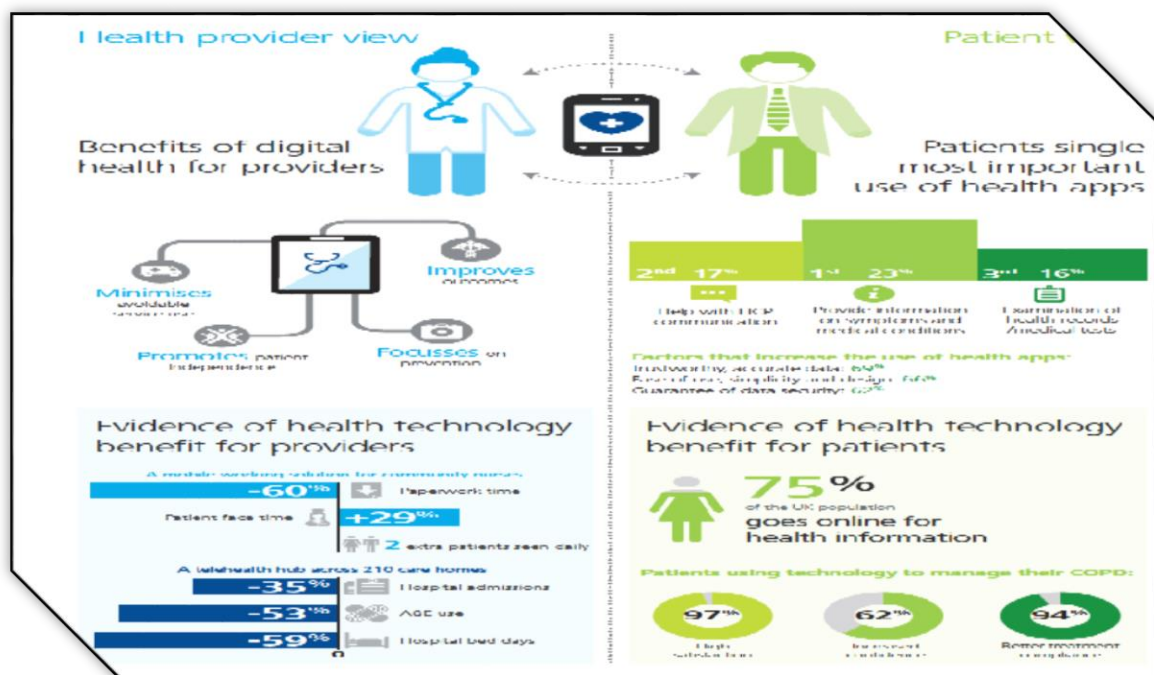


INTERPRETATION

1. Healthcare consumers of all generations are more open to non - traditional services.
2. Younger consumers are least satisfied with traditional care models.
3. People of all ages expect transparent, convenient and high-quality care. They also expect digital capabilities across the lifecycle of health services.
4. New model of non - traditional care delivered via virtual reality is becoming popular.
5. With ever increasing customer expectations towards non - traditional health services it is equally important for the ecosystem to quickly adapt to new digital transforming methods where customer's life becomes more convenient and they have self-service options.
6. To identify, monitor and improve the factors that affect the health of communities, Big data and IoT is being used.
7. Transition from cure to prevention makes the healthcare system more proficient, consistent and cost-effective due to digitalization.

CONCLUSION

- ◆ The digital transformation of healthcare will go miles with digital tools like AI and virtual reality to empower patient engagement and outcomes, institutional investments and technology adoption.
- ◆ Now a day's consumers are more inclined to gather information about their health to focus on prevention and maintenance. Data collected & analysed through these multiple health apps helps formulating different consumer strategies towards healthy lifestyle advice for their patients.
- ◆ Now a days with the help of machine learning new healthcare predictive model can be sliced & diced to visualise when next big health threat may occur so that relevant stakeholders can prepare themselves for any such disruptions in advance.
- ◆ These days, "Telemedicine channel" (home delivery of medicine) is becoming very popular. Remote consultation with healthcare doctors & home delivery of medicines provides great convenience & value for consumers & a step change in primary health care services.
- ◆ Information Security & Cybersecurity have to be an integral part of any health organisation to protect these tech solutions from being hacked & stealing of sensitive patient information. So healthcare sectors have to ensure that they have the right skill people in their organisations to ensure smooth functioning of these operations, protect their branding image due to such disruptions that impact consumer experience.



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PART 2
(COURSE REPORT)

ONLINE COURSE ON
“eHealth: More than just the electronic record”

A REPORT

BY

Dr. MEHAK MAHAJAN

**MBA – Hospital and Health
Management**

2019 - 2021

NAME - “eHealth: More than just the electronic record”

HOURS - 15 hours

UNIVERSITY - The University of Sydney

COURSE DESCRIPTION

"eHealth: More than just an electronic record!" is a versatile course which targets to train the global audience of health physicians, students, managers, administrators, and researchers to reflect on the global impact of eHealth on the combination of care. It discovers the scope of technology application, emerging trends & creates a platform for both native and worldwide eHealth practice and research.

The course was supposed to be completed in five weeks and contained five modules. Certificates were issued to the participants on the basis of their involvement in the course. This course gives insights on the realistic knowledge and implementation of eHealth in practice. It encourages you to pursue advance courses in this domain.

This course aims on following learning:

- “The fundamentals of eHealth and where it is heading”
- “What kind of health data we are currently collecting and how it will transform healthcare in the future?”
- “How new technologies are helping health consumers participate in their own healthcare?”
- “How eHealth can improve the coordination and efficiency of healthcare and what the barriers might be?”

OBJECTIVE OF THE COURSE

- To learn what eHealth is all about.
- Expert's opinion about benefits / challenges and future of eHealth?
- To learn about current trends of technology & usage in Health Sector.
- Learn about current trends of electronic data in healthcare.
- How mobile technology is being used clinically for personal health and healthcare?
- How doctors are using these technologies in their clinical practice?
- With surge in mobile devices / digital adoption across Urban / Rural areas, how consumer expectation is increasing in health sector.

COURSE CONTENTS

Module 1 - “What is eHealth?”

“What are the fundamentals of eHealth and where is it heading?”

Key Concepts

- Compare definitions of eHealth from both health consumers and professionals
- Recognize an eHealth model which illustrates how key eHealth domains intersect to impact on health care
- Develop an insight into the fundamental principles of eHealth
- Appraise your own awareness of eHealth in current practice
- Interpret the current and future challenges of eHealth for both health consumers and health practitioners

Module 2 - “Health in our Hands”

“How are new technologies helping consumers 'participate' in healthcare?”

Module 3 - “Data and the Quantified Self”

“What kind of health data do we collect now and how will it transform healthcare in the future?”

Module 4 - “Interacting with Health Professionals using New Technologies”

“How can eHealth improve the coordination and efficiency of healthcare and what are the barriers?”

Module 5 - “eHealth in Professional Practice”

“How can eHealth principles and technologies be applied in my own professional practice?”

LEARNING METHODOLOGY

This course consisted a lot of videos, practice quizzes, discussion forums and case studies, reading materials and graded assignments to learn the basic structure of eHealth and how healthcare is transforming in future.

There were two graded assessments in this course:

- Firstly, I had to reflect on my own experience, critical understanding & explore a health related app and create a review by using the app and evaluating it on the basis of MaRS rating tool.
- Secondly, I had to suggest some case study based strategies on current eHealth practice. Evaluation was done by our fellow mates and I was supposed to assess their critical analytical skills.

Assignment 1 - Reviewing a Health App

Name of the App : Recharge - Move well, Sleep well, Be Well

After using this app for a week now and evaluating it according to the MaRS rating tool I have come across some positives and negatives of this app. Let's put it into following 6 dimensions:

1. **Engagement** - It is well targeted with negligible issues, has basic interactive features and customisation. However, it lacks more visual content as it only shows graphs and no videos and is not enough to entertain user for a long time.
2. **Functionality** - we can use the app easily as it has very simple guidelines. Most of its features work very fast. It is perfectly logical, clear, consistent and intuitive.
3. **Aesthetics** - It has an appealing and well organised layout, average quality graphics and visual appeal.
4. **Information** - It is pretty accurate in terms of describing the app. It sets achievable goals on daily basis. The information given is self-explanatory and gives broad range of information which is clear, logical and easy to understand. This app comes from a legitimate source - ReachOut.com by inspire Foundation, The University of Sydney's Brain and Mind research institute and funded by the Young and Well Cooperative Research Centre and Macquarie Group Foundation. The daily set of goals are based on the scientific evidence.
5. **App Subjective Quality** - I would definitely recommend this app to my friends who have a disturbed sleeping pattern as it guides you to be physically active and reduces anxiety or stress. I would love to use this app for 3 -10 months and I may pay for it. My overall rating for this app is 4 stars.
6. **App Specific** - After using this app I can say that this app is likely to increase my awareness, knowledge, attitude about health and intention to change my behaviour, sleeping pattern and become physically more active. Earlier I used to sleep around 3 am and wake up next day at 1 pm. Due to this kind of sleeping pattern my health got disturbed as I used to have a lot of body fatigue, headache and acne on my face. After using this app for about one week now I have been a little more active as this app makes me do a lot of exercises in a day which makes you tired and go early to bed.

Assignment 2 - A Practice Based eHealth case

I was supposed to provide an eHealth strategy on Case Study.

A model of E- health has 3 domains:

1. Health in the hands of consumers (wearable devices, apps, internet, social media)
2. Interacting with and between health professionals (tele-health, shared care , rehabilitation, coaching, professional support)
3. Data records and quantified self (eMR, Big data, genomics, predictive and precision health care)

Leukaemia Case Study

Background - Peter (38 years)

Lives with wife and two children, 2 & 4 years old. Peter was diagnosed with leukemia two years ago and is now struggling with his treatment and trying to maintain his daily life. Peter is used to working with computers and would like to be able to use both his computer and his smart phone to access his care information and communicate with his care providers. He has had high blood pressure for a long time and been medicated for it since he was 25. After changing physician, Peter tried to cut down on the medication, but has now been warned of the possibility of stroke.

Healthcare Needs - Peter would like:

- A reminder services for check-ups and treatment.
- To be able to track his own blood count and blood pressure and record how his lifestyle affects it.
- Rehabilitation support, exercises etc.
- Electronic communication with healthcare services – ask questions online without waiting on the phone.
- Participate in support from other young leukemia sufferers.
- Access to his own eMR and the ability to input and share his own health data.

Healthcare Issues - Peter finds that he is not as actively involved and in control of his healthcare as he would like to be. He is frustrated that he's not getting enough rehabilitation and is searching for alternatives.

Suggested eHealth Strategies -

Peter should wear a wearable device consisting of various health applications:

- An alarm for reminder services for check-ups and treatment.
- Health monitor and instant heart rate app to track his lifestyle, blood count and blood pressure respectively.
- E smart application has an advanced symptom management system which could help Peter and his doctor to provide rehabilitation support as it generates alert alarms which provides real time patient symptoms to their clinicians.
- Remote consultations through tele-health and telemedicine systems could help Peter to electronically communicate with healthcare professionals.
- Online Patient communities called LeukaNET on social media platform could engage all the young leukemia sufferers from all over the globe to share their experiences and knowledge about their signs and symptoms which could help them support each other.
- Peter could get access to his own eMR through hospitals, medical insurance company where he has registered himself so that he could share that data with his physicians whenever needed.

KEY LEARNINGS

- Understanding of eHealth from consumers as well as health professional's perspective.
- Learning eHealth model & key eHealth domains & how they intersect with each other.
- Gain an insight into the fundamental principles of eHealth
- Reviewed & rated an eHealth app
- Got insights of currently trending eHealth industry practices.
- Getting familiar with current & future challenges of eHealth for consumers and health practitioners
- Understand the potential of mobile technology & how that elevates consumer experience.
- Consider strategies for including mobile health apps in your professional practice.
- How innovative tech, creates magical experience between consumers and professional.
- Advantages of technology-based eHealth services in bringing efficiencies, controls & productivity.
- Differences between online and face to face health service interactions.
- Insights on new models of healthcare supported by telehealth, social media and personalized apps.
- Read different case studies & how eHealth records assisted in overcoming serious illness.
- Got an experience to write an eHealth Strategy based on case studies provided in the course.