eHealth: More than just an electronic record

SUMMER TRAINING REPORT

By

PRIYA SHARMA

MBA (Hospital and Health Management)

2019-2021

IIHMR UNIVERSITY

ACKNOWLEDGEMENT

Foremost, I would like to express my sincere gratitude to the instructor of the course "*eHealth-more than just an electronic record*", Prof. Tim Shaw, University of Sydney and all the guest presenters for sharing their profound knowledge, skills and insights to help us learn and gain expertise throughout the course.

I extend my gratitude to University of Sydney and Coursera for designing such an interesting and knowledge-packed course that we were able to develop clear and thoughtful rationales and adhere to the course to the last.

Besides them, I would like to thank my mentor Prof Shweta Aggarwal; Dr. P.R. Sodani, Pro-president dean; the entire academic team of IIHMR University for their active co-operation and providing guidelines time to time.

I am extremely indebted to Dr. Pankaj Gupta, president, IIHMR University for providing us this golden opportunity of to learn through an online platform.

Finally, I would like to acknowledge my parents and everyone who knowingly or unknowingly helped me to get through this course.

TABLE OF CONTENTS

COURSE DESCRIPTION

The MOOC, "eHealth: More than just an electronic record", is multidisciplinary in nature and aims to equip the global audience of health practitioners, administrators and researchers to reflect on the overall impact of eHealth on the integration of care. It explores the breadth of technology application, current and emerging trends, and showcases both local and international eHealth practice and research.

Whether you're a health clinician, student, manager, administrator, researcher or just someone who is interested in the theory and practice of eHealth, this course keeps everyone interested and provokes some good thinking around the pros and cons on the use of technology. It anticipates plenty of discussions and debates over the coming days with respect to how we can incorporate eHealth into clinical practice and even in self-health and wellbeing. This course gives an excellent view of eHealth in a wider perspective and importantly its innovative significance in Healthcare organization.

This course is quite different from other MOOC as there are not really right and wrong answers in this rather, they use practice quizzes and discussion forums so that we can test our own learning. The entire eHealth Course consists of 5 modules and took about 5 weeks to complete.

OBJECTIVE OF COURSE

The main objectives of this course were to brief us about

- The fundamentals of eHealth and where it is heading with advancement of technology and increasing demand of healthcare.
- 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 to participate in their own healthcare and
- How eHealth can improve the coordination and efficiency of healthcare.

Along with this, this course taught us to develop questionnaires with appropriate rationales behind then so that we are able to asses

- What barriers might be faced by consumer.
- Different facets of e-health according to the consumer.
- Different applications and interventions currently in practice in order of their efficiency.

The list of objectives also includes an introduction to a framework with the help of which we can rate the healthcare apps more objectively.

COURSE CONTENTS

The course contains 5 modules that constitutes minimum of 5 video-based lessons and maximum 10 lessons each. Besides this, it has 1-2 practice quiz and 2-3 reading material/case study at the end of each module. These modules are divided into 5 main headings to accomplish the objectives of the course as follows.

Module 1 : What is eHealth?

Key question answered in this module was “What are the fundamentals of eHealth and where is it heading?”

To complete this introductory module, we need to view the video lectures for each lesson and complete the four listed ungraded learning activities. It was also recommended to read the references and further resource list to consolidate our learning.

Module 2 - Health in our Hands

It dealt with "How are new technologies helping consumers 'participate' in healthcare?" To complete this module, we also required to complete the graded Peer Review Assignment 1 (40%) for submission as per the assignment instructions. It is also recommended that we read the references and further resource list to consolidate our learning.

Module 3 - Data and the "Quantified Self"

Objective covered in this module was "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

It briefed us about "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?" was covered in the last module. This module has maximum number of video lectures i.e. 10 and it ended with peer-reviewed assessment quiz (60%).

METHODOLOGY

- The Course was taught through video-based lectures. The course teaches from basic to advance level.

- This course is quite different from other MOOC as there are not really right and wrong answers in this, rather, they use practice assignments and discussion forums so that we can test our own learning. Even the quizzes are designed in a such way that person can get knowledge about current progress in e-health.

- There are two main assessments in the MOOC, one in Module 2 (40%) and another in Module 5 (60%). Firstly, in Module 2 we'll share our own critical thinking, experience, and research on using a health-related app. Secondly, we'll were asked to reflect on eHealth in practice using a case-based example. Peer-review assessment were done for critical analysis skills and thoughtful rationales were considered for marking and wiser for the effort.

- It gives lot of case study and extra material to study at the end of each module.

- The course contains a lot of interviews of experts.

KEY LEARNINGS

Technology is enabling a new delivery of health services, health efficiencies and overall improvement to health quality. We are using technology to support communication between healthcare providers and healthcare consumers.

Transformation of technology and rapid digitalization aren't the words that the health system is used to dealing with especially in India. So, we need a whole culture change happening inside healthcare sector. Out of all the challenges, one of the biggest challenges is taking what patients expect, seamless, connected, coordinated care and really delivering that. eHealth has the ability to make those transitions from traditional Healthcare to technology-based care, seamless. eHealth is a potent catalyst for change in healthcare delivery.

Challenge of developing a perfect e-health intervention at this level, is to manage the relationship between our biology and our environment. We need sophisticated data analytic procedures to a form that's tractable for designing new interventions. For example, predicting a person's health given their biology and their lifestyle. In terms of new biomarkers for example, that can help prevent health problems or provide opportunities for early treatment of those health problems. The one common unit that travels throughout the health services is that our services at the moment are a disjoint from the patient's perspective, the information sits in isolation in many different places. The one common thing is the way in which we should start to align the information, that is around the patient by asking them what their issues of concern are.

In **MODULE 1**, we learned how broad the definition of e-health is, and the potential for e-health to transform healthcare delivery. We looked at the exciting future of e-health, but also what the challenges are we face. We learned that healthcare is at the cutting edge of technology use but way behind other industries in terms of some of the basics, such as overcoming people’s perception about eHealth, confidentiality barriers, sharing of information through apps/devices to medical professionals. These factors harness seamless transition of traditional healthcare delivery to eHealth.

In **MODULE 2**, we learned about the explosion in mobile technology and how this is transferring care into the hands of consumers. The most rapidly expanding and transformative area of eHealth relates to what we call, health in the hands of consumers which includes the use of apps, websites, social media, and wearable devices to share their data with their health professionals. eHealth helps to empower consumers to be more engaged with their own health, owning their own information. It empowers doctors by giving access to pertinent patient data whenever the data are needed. What started as static websites, telepsychiatry has morphed into this amazing array of different technologies. New and emerging technologies ranging from things like a portal right through to assistive technologies, biometric devices, apps, but what's really interesting is how we can actually bring these systems together and providing cost effective personalised

care to the patients. Quite a change in the way in which we think about healthcare delivery and it's going to be a big paradigm shift for our healthcare services.

Key learning of this area is how technologies racing ahead of the evaluation and understanding of the impact of mobile health on health outcomes. This module also emphasized the shift from healthcare to health and wellness and the fact that it's the time spent between visits with health professionals and maintaining our wellness, that ultimately may have the biggest impact on our health outcomes. mHealth in education and awareness using it as a helpline to provide assessment, and treatment support for remote monitoring, and data collection. It can also be used for disease and epidemic outbreak tracking.

From the individual's point of view, mobile health is not only convenient, but it puts health and healthcare into their own hands. It helps them to self-monitor and take control of their circumstances, which for people with chronic conditions, such as diabetes means that they can monitor their health in the comfort of their own home, which may reduce the need for unnecessary admissions to hospital and thus reducing the overall cost for patient. From the healthcare professional's perspective, it can help to make informed decisions faster in order to improve outcomes for the patient. It may also reduce the increasing demands on resource stretch systems and efficiently collect patient reported outcomes and can do the analysis and testing of those measures to get a result that's useful for doctors or other healthcare members.

Wearable devices can be used for a wide range of purposes. This includes capturing and displaying personal health data, plotting data to monitor and track progress, delivering information in a variety of formats and providing opportunities for communication with health care professionals and patients and providing links to social networks. We can now carry very inexpensive devices for measuring physical activities. We've heard a number of examples internationally of people using things, like Fitbits, and monitors, as part of their everyday life. We can also look forward to a contact lens that will enable us to measure our glucose levels. All around us, devices are being used by a wide range of individuals to track their performance, diet, sleeping patterns, and almost every conceivable health metric. It can be used to alert patients for routine or follow up consultations, to monitor patients' vital signs

Applications or apps, wearable devices, online health information and social medias are all being used to motivate healthy behaviours, monitor existing conditions and overall, to improve the quality of care.

In **MODULE 3**, we looked at health data and the challenge in linking the vast array of health data points we were collecting into a comprehensive and usable picture for both patients and Healthcare facilities. We can see that the impact of big data sets such as a genome and the challenge and opportunity that this presents us. We looked at how the patient is perhaps the rightful custodian of their own data, and that they are the only common link across the multiple health providers they encounter. We discussed the challenges around data privacy, and we concluded with a look at how we are only just now looking at the downstream use of health data for performance management and quality improvement.

In **MODULE 4**, we looked at the role of technology in facilitating communication. We're only now starting to integrate technology enabled communication into new models of care.

eHealth can drastically fill the gap between high demand and low supply in countries like India. This is partially due to the increasing prevalence of smartphones, which makes them accessible to almost everyone. This is called positive computing, the design and development of technologist to support psychological well-being. Human computer interaction is about creating interfaces that people of all age, race, ethnicity and vast diversity can actually use effectively.

It is to give elder patients, the one less versed with technology, a delightful experience that do things they had never expected and certainly fit well into what they really want. Hence, we need to create little prototypes, simple versions of an interface and then see how people use it in order to do this co-design where they design the interface by sharing their vision through feedbacks.

One of the major Key learnings of this course was **MaRS Rating Scale** on the basis of 3 dimensions i.e. classification, quality and satisfaction.

MaRS (Mobile-application Rating Scale) is a scale used to critically rate healthcare app. The MARS was used to rate app quality. It contains 23 items in 3 sections: classification, app quality, and satisfaction. Each MARS item uses a 5-point scale. The classification section is only for descriptive purposes. The 19-item app quality section rates apps on four subscales: engagement, functionality, aesthetics, and information quality. The subjective quality section contains 4 items evaluating the user's overall satisfaction. The MARS is scored by calculating the mean scores of the app quality subscales and the total mean score. The subjective quality items are scored separately as individual items.

The MaRS tool is available for download on the Young and Well Cooperative Research Centre website at *http://pandora.nla.gov.au/pan/141862/20160405-1343/www.youngandwellcrc.org.au/wp-content/uploads/2015/03/MARS-Scale-App-Classification-Young-and-Well-CRC.pdf*

For rating an app first and foremost we need to Determine:

1) how easy it is to use;

2) how well it functions;

3) does it do what it purports to do.

Then we need to Review the settings, developer information, external links, security features, app description and identify information on the purpose, functionality, affiliations of the app developers, how the app was developed and if it has been tested. For which we need to conduct an online search using the app name to identify up-to-date information on the app. Google scholar may also need to be searched for evidence base on the app in the scientific literature if any.

How to test App Quality with MaRS ?

The MARS Rating scale assesses app quality on four dimensions. All items are rated on a 5-point scale from "1.Inadequate" to "5.Excellent". The number that most accurately represents the quality of the app component to be rated are circled. It is divided into 4 sections that consists the following categories:

A. **Engagement** – entertainment, interest, customisation, interactivity, appropriateness for target group.

B. **Functionality** – performance, ease of use, navigation, gestural design

C. **Aesthetics** – layout, graphics, visual appeal.

D. **Information** – accuracy of app description, goals, quality and quantity of information, visual information, credibility, evidence base.

E. **App subjective quality** like Would you recommend the app, number of times you would use app, would you pay for app, overall (star) rating.

F. **App-specific details** like user's awareness, knowledge, attitudes, intentions to change, help-seeking, and behaviour change.