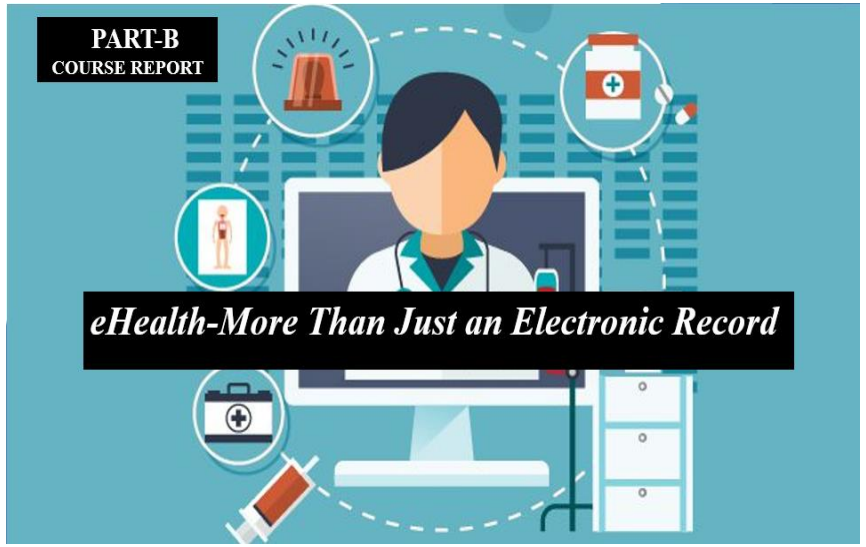
SUMMER TRAINING REPORT



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PART-A

ACCEPTIBILITY AND FEASIBILITY OF TELEMEDICINE SERVICES IN REPRODUCTIVE HEALTHCARE: WOMEN'S PERSPECTIVE

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INTRODUCTION

- Due to **biological and socio-cultural reasons**, women have more gender-specific healthcare needs and are **high utilizers** of healthcare. Therefore women are more likely to use mobile-health as compared to men. and can heavily benefit from tailor-made TM interventions.

- **Telemedicine** is the use of electronic information and telecommunication technologies to support and promote long-distance clinical healthcare, patient and professional health-related education, public health and health administration.
- TM is self-service model that can promote the **participation of women** in Healthcare by being more accessible; cost-effective and can improve patient compliance with treatment plans, improve patient satisfaction with health services and in-turn prove quality of life.

- **In gynaecology**, for issues such as well-woman visits, preconception counselling (PCC), pre/post-menstrual care, preventive care, postpartum care, counselling for new parents, infertility, family planning, post-operation follow-ups, referrals, feedbacks and mental health issues; TM is beneficial.

TELEMEDICINE & WOMEN HEALTHCARE

PREVENTIVE CARE AND ROUTINE CHECK-UPS

Important features of a routine check-up include discussion of reproductive plans, premenstrual and postmenopausal issues, screening for medical conditions if any, referrals etc. TM can store and transfer the History of medications, complications, infertility, tumours/cancers etc to other specialist doctors/hospitals easily. Health professionals can easily access this information during routine check ups and can advise patients to seek screening, therapy and immunization based on the age and risk factors. It can **enhance preventive care** as this stored medical information plays vital role in decisions making about sustaining healthier lifestyles and lifestyle medicine to improve the overall wellness.

BIRTH CONTROLS/FAMILY PLANNING

Doctors can assist a patient, the correct dosage of suitable contraceptives; achieving conception with safe childbirth but It can only be applied if the doctors have thorough information of lifestyle patterns, body weight, diet, health screening, vaccination, previous medical conditions, reproductive history including RPL, stillbirth, history of delivery of an infant with congenital anomalies, history of preterm labour, diabetes etc. again TM’s tremendous potential to store and transfer information comes into picture here.

Modifications in smoking , alcohol consumption activities and the avoidance of illicit substances may also be controlled up to some degree through TM.

TM IN ULTRASOUND, CANCER-SCREENING, MEDICAL ABORTION

An important component for a woman of reproductive age is guidance regarding her reproductive health. In India, Most case studies indicate that ingestion of wrong oral contraceptive or unprescribed abortion pills was one of the main risks to young women because of the fear of being judged by people. Through TM the patient can easily share her history, symptoms and risk factors to her doctor at comfort of her home and in return can receive personalized information about variety of things like ideal time to conceive, infertility assessment, STDs, UTIs, dosage of suitable contraceptives etc.TM is an appealing choice for gynecologists when it comes to taking decisions related to treatments, terminations of pregnancy and makes it possible for clinicians to seek second opinions. It helps in early detection of the problems by imparting knowledge and increasing involvement of patient in personalized healthcare.

MENTAL HEALTH AND TELEMEDINE

In countries like India the severity of depression / anxiety is prevalent in infertile or a woman suffering from chronic diseases such as breast cancer, rheumatoid arthritis because of the stigma associated with such problems is still prevalent in society. In other countries, moral assistance, mindfulness providing tele-services have been well-researched and yielded promising outcomes in psychological treatment through e-counselling, online programs that provide emotional support, interaction with other patients with similar problems etc. Therefore, TM is even beneficial in improving patients' mental wellbeing.

PREOPERATIVE COUNSELING, POSTOPERATIVE FOLLOW-UPS, REFERRALS, FEEDBACKS

TM helps patients to be treated in remote locations by physicians saving considerable time and money, resulting in improved patient satisfaction and reducing higher net healthcare costs. Physicians can assess patients after operation or delivery, counsel for post-natal care, asks for feedback, advice referrals all through tele-consultation and reduce unnecessary hospital visits and burden on hospitals.

Therefore, to overcome barriers of increased demand of women healthcare, TM seemed to be the best solution. But TM interventions for women reproductive healthcare and studies regarding their perspective for TM services are yet unknown in India. Therefore Gender-specific approach is must to optimize and utilize TM technologies for their maximum benefit.

RESEARCH QUESTION

To study the perspective of women in acceptability and feasibility of Telemedicine services for their reproductive healthcare.

RESEARCH OBJECTIVE

- To describe women’s preferences, perspective and acceptance for telemedicine services for their reproductive healthcare.
- To Asses the barriers of Telemedicine faced by women.
- To understand its feasibility i.e. if Telemedicine holds promise for reducing disparities in access to women’s healthcare.

METHODOLOGY

- A descriptive-quantitative study was done using self-administrated online questionnaire for females of reproductive age group 15–49 years, living in urban areas of Amritsar. The survey was conducted in English language and the questionnaire had 2 sections to asses Knowledge, perspective and acceptability for various telemedicine-healthcare services.

- Questions were structured such that for each given service, respondents selected their preferred mode from the following options: virtual visit/call (teleconsultation), in-person visit, either or not interested in this. Some questions were structured to analyse their preferences for situations that are non-specific to reproductive health but are important for women-wellness like mental health, referrals etc.

- Along with this, the section that dealt with Knowledge and perception of women towards telemedicine included questions like if they were aware of modalities like practo, mFine app, wearable devices; have they ever used such modalities; what acc. to them are the barriers they might face while using Telemedicine services.
- The survey also included questions like if they were interested in getting SMS/app-based information, alerts or reminders related to menstruation cycle, birth control, family planning, etc and how would they prefer to receive it.

RESULTS

Total 50 women between the age group 15-49 years living in urban or semi-urban areas of Amritsar responded to the online survey.

- The survey found that 30% women preferred virtual visit/call for ‘birth control and family planning related issues’; 46% preferred an in-person visit and 24% said either would work.
- For ‘information/counselling regarding urinary tract infection or sexually transmitted disease/HIV’ only 24% preferred virtual visit/call; 56% preferred in-person visits and 20% were comfortable with either of the two.
- For questions related to “Post-partum or Pre/Post-natal care” 62% preferred virtual care, 20% in-person visit and 18% either.
- When asked about “Menstruation related issues like Dysmenorrhea, Amenorrhea, Menopause etc” 60% preferred a virtual visit/call, 26% preferred in-person visit and 14% either.
- For “Vaginal/Uterine Health issues like odour, PCOD, Endometriosis etc”, 56% preferred virtual care, 32% preferred an in-person visit, and 12% either.

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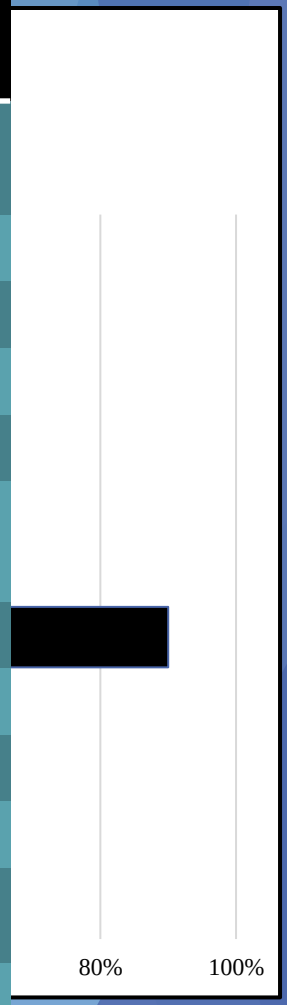
Response to some questions that were not specific to reproductive health but necessary for overall women-wellness were as given in the table:-	
Follow-ups to know "How are you doing" post operation/new medications etc	
Virtual visit/call	62%
In-person visit	28%
Either	10%
For referrals, prescriptions, feedbacks etc.	
Virtual visit/call	64%
In-person visit	18%
Either	18%
For Mental Health Counselling	
Virtual visit/call	50%
In-person visit	28%
Either	22%



CONCLUSION AND RECOMENDATIONS

- After analysis of the results, it is clear that women do have some Knowledge about Telemedicine as some of them have used online search engines to look for doctors, have received online lab results.
- The Maximum number of responses in favour for virtual feedbacks, referrals, mental health counselling, follow-ups, e-prescriptions, willingness to receive app-based alerts/reminders and pay for online information/counselling shows that women have accepted telemedicine services up to some extent.

- For information on issues like STDs/IUDs/HIVs, teenage pregnancies women preferred in-person visits which may be because of breach of Health privacy and technology barriers such as non-user-friendly apps along with this stigma around such topics/ fear of being judged if people came to know is also prevalent thinking in Indian-society. This may had influenced the in-person choice.
- Similarly, the respondents had knowledge about wearable devices, health-apps they didn't seem to use them which again could be due to same reasons.
- However, women preferred tele-consultations for counselling/information, vaginal/uterine health, birth control, menstruation, pre/post-natal care maybe because the participants were majorly educated urban women and it would benefit modern age working women, especially a new/young mother by reducing transportation cost, long wait times at clinics and hospitals rather they can easily communicate to their doctor within the comfort of their home or workplace.

Clearly, "one-size-fits-all" approach can't be followed in providing patient care through TM in country like India, especially for women healthcare that is prone to face different socio-economic challenges. To reduce potential harms in building safer and stronger healthcare services, few steps must be taken.

- The study shows, Women require the appropriate knowledge and skills to efficiently incorporate self-care technologies. Teleconsultations, remote monitoring etc may add personalized attention to their wellbeing. These new technologies hold a large amount of information and can thus become a fantastic resource for exchanging health data with doctors. Web-based training resources, app-based notifications for birth control warnings and records of family planning, menstrual cycle, ovulation, etc. are highly accepted and thus it must be exploited in upcoming tools to personalize patient's health treatment.
- Firstly, educational institutions, NGOs can help to address the technology-related barriers amongst the consumer by creating an understanding of how digital technologies are used, shared, and kept private through area-wise workshops.
- Hospitals need to inculcate basic TM technology in their routine operations to simplify digitalization for healthcare workers. With wide variety of modalities in use, incorporation of TM services that help in bidirectional communication loop, like wearable devices which takes home-based tracking of vital status directly to healthcare teams can hugely benefit the hospitals in reducing burden on OPDs. Thus, Hospitals/Healthcare providers are recommended to promote active participation in which women fill or submit health records, test reports by themselves and passive participation in which data is collected by monitoring devices and sent to their doctors on a scheduled basis.
- Research based academic institutions like IIHMR University and technical institutes like IITs, must work with government and hospitals to design TM applications and interventions. Use of less costly modes such as asynchronous mHealth or advanced computer algorithms will make long-term treatment feasible and would be safe and cost-effective.

- The sensitivity and stigma related to women reproductive healthcare must be kept in mind while planning an intervention. Since privacy is one of the main concerns of the respondents, TM interventions designed for the purpose must pertain high-level of confidentiality. Also, the mode of delivery and requirement to afford such features must be considered to ultimately reduce the cost.
- Designing devices that allow patients to follow a script need to be efficient therefore perceptual, motor and cognitive abilities need to be considered when matching technology to patients. The user interface must be straightforward, easy to use and provide constructive interaction to patients. For eg. Computer-based apps could be better suited to elderly patients as it uses large screens and static interaction. For time-limited medical conditions such as pregnancy short-term interventions are appropriate. However, mental health and other chronic conditions require multiple follow-ups over extended period of time. The findings reinforce the importance of ensuring access to reproductive healthcare services via TM to best meet women's individual preferences. To thrive in emerging innovations, they have to meet a variety of consumer needs.
- Analysis of macro-level issues and shortcomings by reviewing and refining of tools and methodologies with consistent customer input is also a perfect technique for developing reliable resources that function well in diverse healthcare framework.
- For researchers, standardized and validated measures, ethical guidelines are must to be followed to avoid study bias. It is important for policymakers and payors to ensure coverage, access, and adequate reimbursement of TM services for reproductive healthcare and other services critical to women's health throughout the lifespan.

DISCUSSION FUTURE STUDY

- There are only few published studies that target gender-specific TM approaches and almost no ground scientific evidence on health outcomes of existing telehealth interventions in India. Systematic assessment is needed to determine the efficacy and effectiveness of TM for women healthcare until they can be disseminated broadly in daily patient care.

- Future research must consider reviewing study areas of TM services such as cost-effectiveness; impact on quality of care; preparedness of healthcare system; effects on medical facilities like OPDs and IPDs, teleconsultations ; feedback from patients and healthcare providers; techniques for maximizing health equity.

- The researches must focus on use of TM to address inequalities in access to treatment due to race, gender, social background; privacy and security problems related to HIS; confidentiality problems for vulnerable groups, especially youth in need of mental health services, abortions, child abuse and lastly incorporation of education for sustainability and optimization of TM for modern healthcare delivery.

PART-B
COURSE REPORT

eHealth-More Than Just an Electronic Record

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

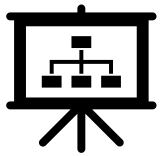
The main objectives of this course were to brief us about

1. The fundamentals of eHealth and where it is heading with advancement of technology and increasing demand of healthcare.
2. What kind of health data we are currently collecting and how it will transform healthcare in the future?
3. How new technologies are helping health consumers to participate in their own healthcare and
4. 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

1. What barriers might be faced by consumer.
2. Different facets of e-health according to the consumer.
3. 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

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.

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. 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 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;
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The MARS equate" 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.