

**ACCEPTIBILITY AND FEASIBILITY
OF TELEMEDINE IN REPRODUCTIVE
HEALTHCARE: WOMEN'S
PERSPECTIVE**

SUMMER TRAINING REPORT

By

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Research Question:

To study the perspective, acceptability and feasibility of Telemedicine in women reproductive healthcare.

Objective:

1. To describe women's preferences, perspective and acceptance for telemedicine services for their reproductive healthcare.
2. To assess barriers of Telemedicine in reproductive healthcare of women.
3. To understand feasibility of telemedicine i.e. if it holds promise for reducing disparities in access to women's reproductive health care.

Abbreviations and Keywords

TM- Telemedicine

TH- Telehealth

mHealth- Mobile Health

UTDs- Urinary Tract infections

STDs- Sexually Transmitted Disease

HIS- Health Information System

COPD- Chronic Obstructive Pulmonary Disease

ICMR- Indian Council of Medical Research

NeHa- National eHealth Authority

VRCs- Village Resource Centres

RPL- Recurrent Pregnancy Loss

PCC- Pre-Conception Counselling

PCOD/PCOS- Polycystic Ovary Disease/Syndrome

ICT- Information Communication Technology

INTRODUCTION

“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” (Goldstein et al., 2018). Variety of technological approaches are encompassed in TM to connect patients and healthcare with the goal to provide efficient, personalized access to care and secure sharing of health information. Demand of TM has increased as the global pandemic COVID-19 has accelerated the emphasis on need of efficient healthcare system and delivery.

“Healthcare personalization by delivering the right intervention to the right patient at the right time is the main focus areas of implementation of TM” (Goldstein et al., 2018). Due to biological and socio-cultural reasons, women have more gender-specific healthcare needs. “Women are more likely to use mobile compared to men” (Kontos et al., 2014). Hence, they are high utilizers of healthcare and can heavily benefit from tailor-made TM interventions. “To overcome barriers of increased demand of women healthcare, TM is the best solution” (Pan et al., 2014). “Gender-specific approach is must to optimize and utilize TM technologies for their maximum benefit” (Guo et al., 2015). But most effective TM interventions for women reproductive healthcare are yet unknown in India.

To understand effectiveness of TM in women healthcare, we must discuss its capabilities initially. TM is self-service model that can promote the participation of women in Healthcare, by being more accessible. Improved patient compliance with treatment plans, improved patient satisfaction with health services and thus improved quality of life are main goals of TM implementation in women healthcare. Delivering healthcare to remote geographical locations and in turn reducing the overall costs by eliminating travel expenses accumulated in travelling to clinics/hospitals. “TM has potential to reduce emergency cases by promoting self-check-ups” (Bashshur et al., 2013). TM gathers vast volumes of data that can be used for medical studies, and contributes to women's healthcare financial planning. TM lets patients and health-care facilitators use the health-care system optimally. An successful healthcare system must reduce women's exclusion on the basis of cultural or social differences by increasing their participation through intelligent technologies. Implementation of Health Information System (HIS) using accurate and reliable data generated by TM technologies can help in increasing organizational efficiency by reducing medical error rates. Furthermore, different researches have shown that such systems can enhance Organizational efficiency by enhancing treatment outcomes through teleconsultations and reducing clinical visits (“Outcomes Research,” 2020). TM can potentially relieve our overburdened healthcare system, contribute to behaviour modification related to women health and help in long-term management of chronic illnesses. TM poses high potential to improve quality of medical care with increase in efficacy, efficiency, convenience and decreasing cost. TM can positively affect utilization of medical resource and quick decision making by healthcare practioners as well as patients. “Studies that compared TM to traditional outpatient care recorded savings estimates ranging

from 17% to 75% and comprehensive reviews of TM studies among patients with COPD, heart failure, and stroke concluded that there were reductions in hospital admissions/readmissions, length of hospital stay, emergency department visits, and often a decrease in mortality” (Dinesen et al., 2016). “NASA and ISRO in setting up of the TM and Health Ministry of India to setup a TH taskforce that paved way for the success of various projects like the ICMR-AROGYASREE, Neha and VRCs” (Chellaiyan et al., 2019).

In India many organizations have adopted TM strategies especially during the ongoing corona-crisis to support patient care. Evolution to various smart phone apps for wellness and fitness help in better support care process and has contributed in emphasizing the requirement of TM in healthcare industry. Yet a proper TM intervention specifically targeting women healthcare is unknown in India.

Different types of services like easy access to doctors, close monitoring of patients, store and forward, real-time self-monitoring are some benefits of TM. “Even though TM is not the solution to all problems but it can surely help decrease the burden of the healthcare system to a large extent” (Chellaiyan et al., 2019). 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

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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.

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.

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

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. The survey was conducted in English language and the questionnaire had 2 sections to asses Knowledge, perspective and acceptability for various 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.

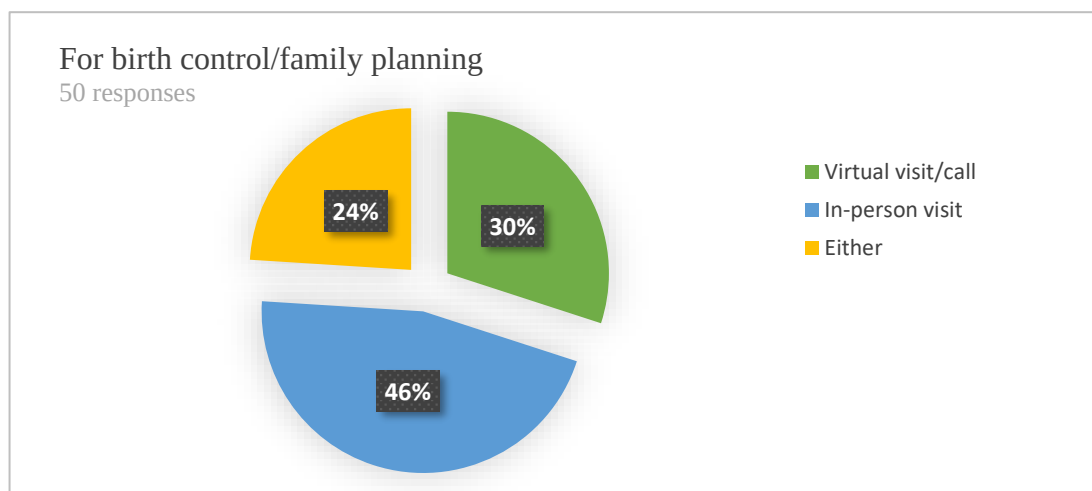
Along with this, the section that dealt with perception of women towards telemedicine included questions like barriers they might face while using Telemedicine services.

The survey also included questions like if women 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.

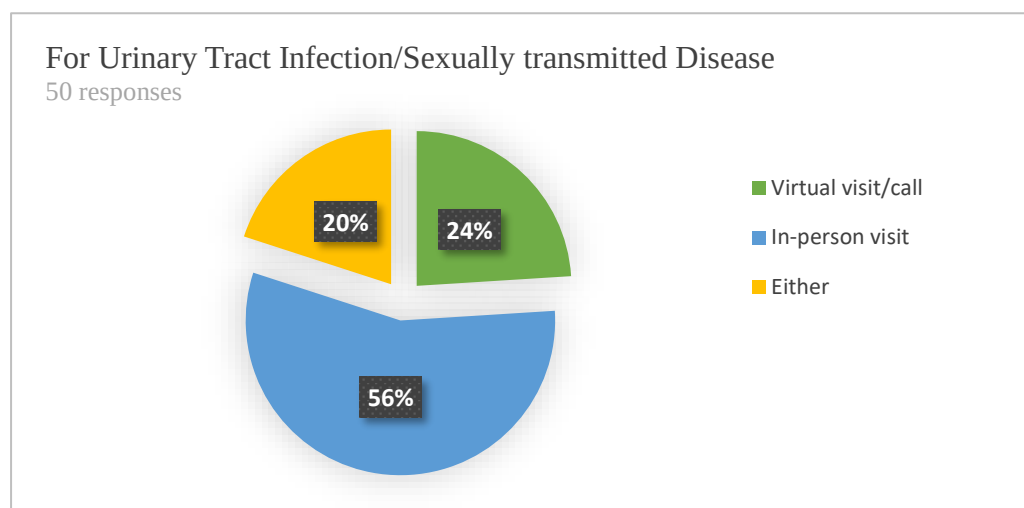
RESULTS

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

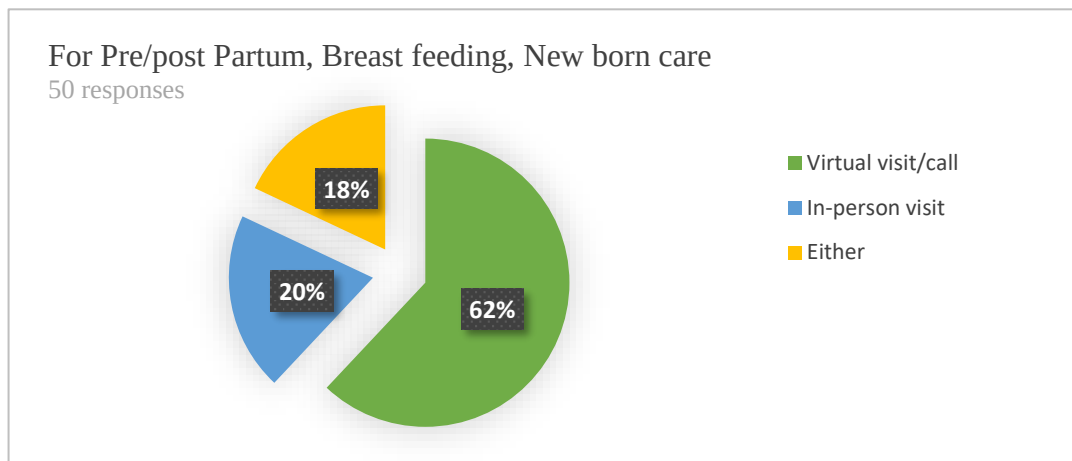
- The survey found that 30% women preferred virtual visit/call for 'birth control and family planning related issues'; 46% preferred an in-person visit and 24% said either would work.



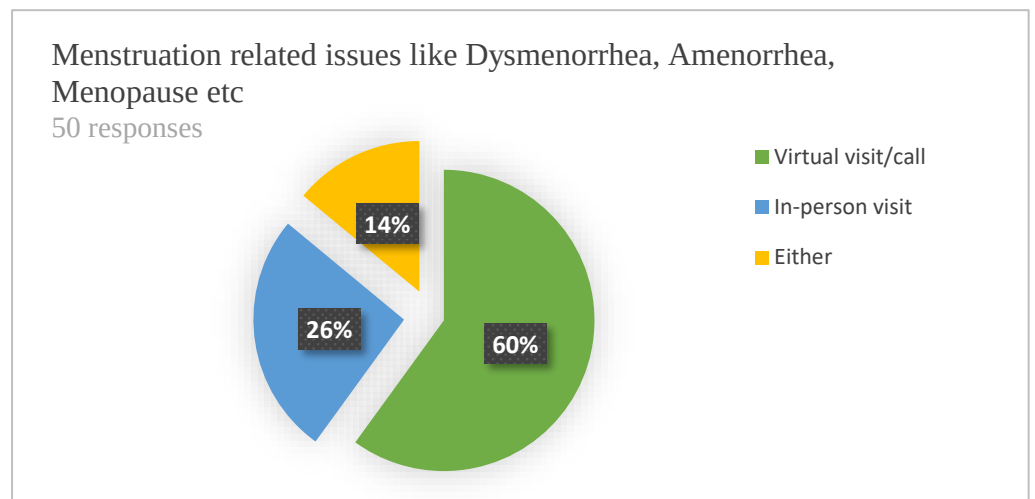
- For 'information/counselling regarding urinary tract infection or sexually transmitted disease' only 24% preferred virtual visit/call; 56% preferred in-person visits and 20% were comfortable with either of the two.



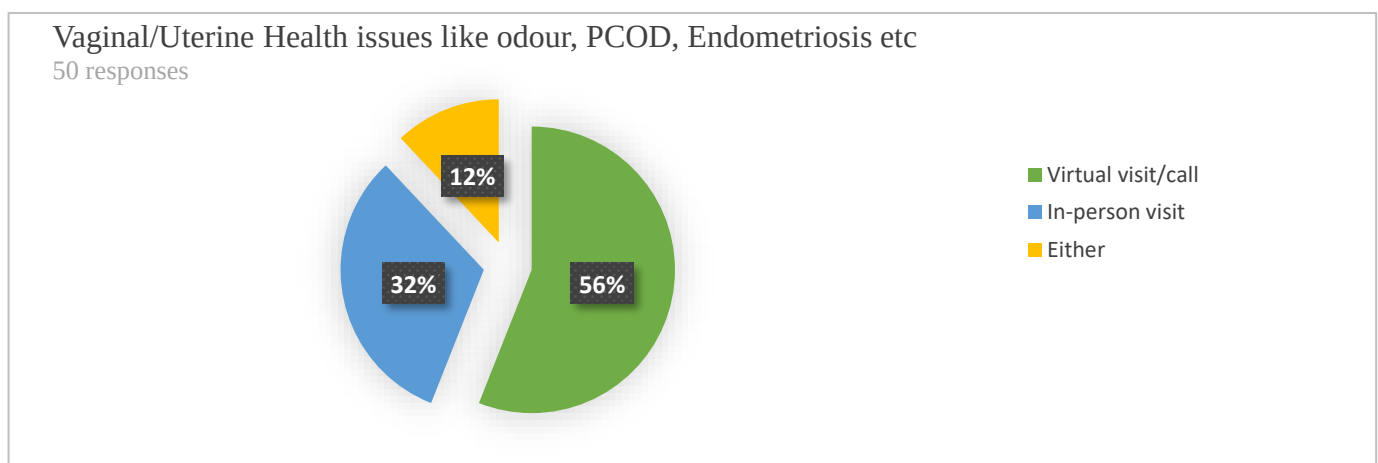
- For questions related to “Post-partum or Pre/Post-natal care” 62% preferred virtual care, 20% in-person visit and 18% either.



- 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.

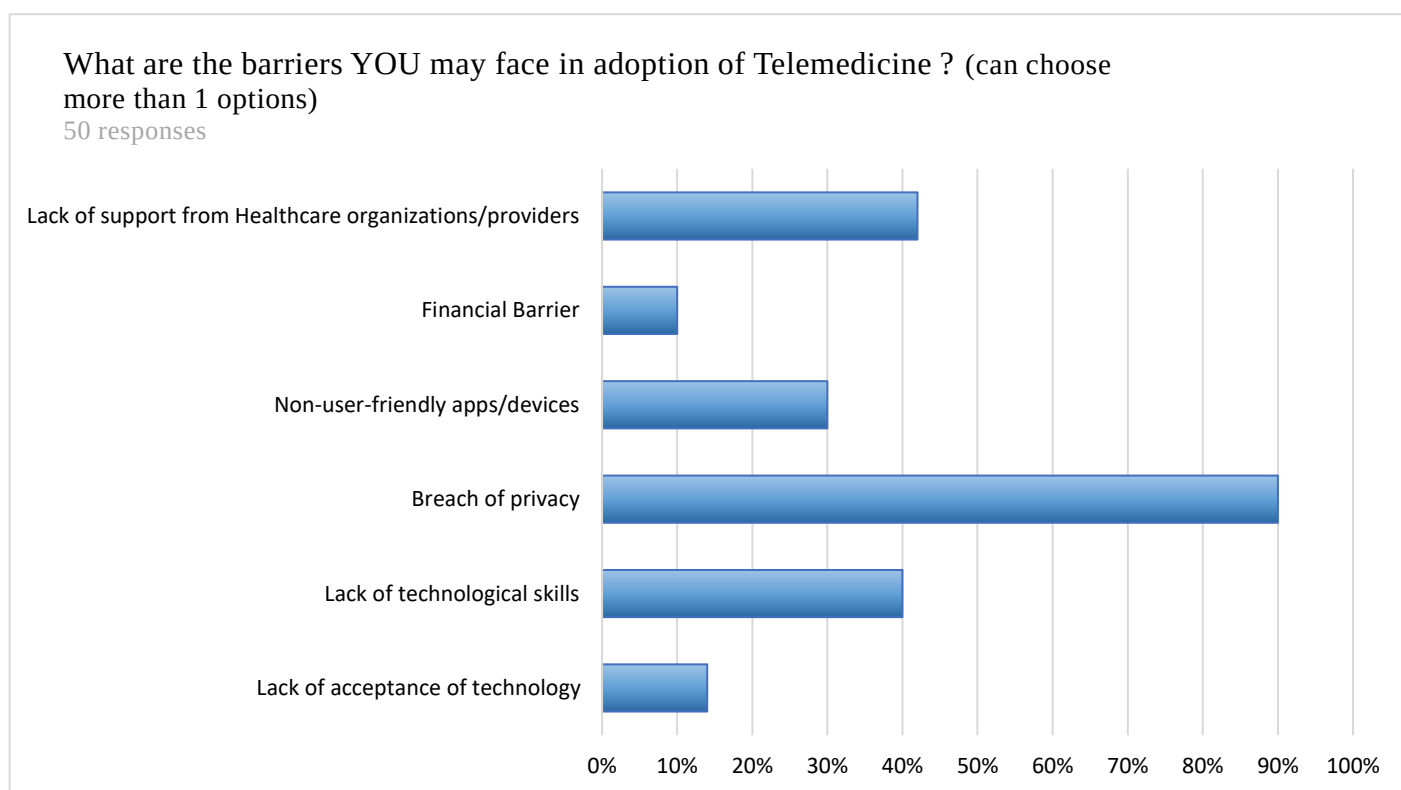


- For “Vaginal/Uterine Health issues like odour, PCOD, Endometriosis etc”, 56% preferred virtual care, 32% preferred an in-person visit, and 12% either.



Through many responses it was analysed that majority women preferred female counsellor over male, but some reported that they would not have a problem speaking to a male counsellor for discussion of their reproductive health related issue. Analysis of the responses cleared that respondents were willing to use apps-based reminders/alerts or record maintenance of their menstrual cycle, birth control, appointments, prescriptions, medications etc.

Majority of the women generally voted for free message service but to many it seemed reasonable to pay for personalised information they needed. Most of the women agreed that technological interventions can ease their healthcare journey up to an extent, yet they were concerned about barriers like lack of breach of health privacy/confidentiality Barrier (90%), technological knowledge (40%), non-user-friendly apps (30%) and lack of support from Healthcare organizations/doctors/clinics etc (42%)



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 RECOMMENDATIONS

The study showed that many respondents were interested in TM for reproductive health care services. For information regarding taboo 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 have affected the in-person choice.

However, women preferred tele-consultations for counselling/information related to 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.

High votes for virtual feedbacks, referrals, mental health counselling, follow-ups, e-prescriptions, shows that women have accepted telemedicine services up to some extent.

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.

- 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.
- Healthcare 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 and alter-care need to be efficient therefore perceptual, motor and cognitive abilities need to be considered when matching technology to patients” (Dinesen et al., 2016). The user interface must be straightforward, easy to use and provide constructive interaction to patients. 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.
- 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.

In a nutshell it can be recommended that

For patient

Organisation of area-wise workshops for enhancing their engagement in their own health through TM interventions by providing consistent health literacy, eHealth literacy, technological skills, promoting smart wearable or at-home TM technologies (wellness and health devices, internet), providing patient to patient interactions/reviews for encouragement are some suggested steps which can contribute in more acceptability and feasibility for TM in women Healthcare.

For healthcare provider

Encouraging communication with patients through mHealth interventions, wearable and remote monitoring devices; providing health education to patients whenever possible/needed; TM training by designing groups of knowledge and practice for doctors and staff are some beneficial steps to overcome barriers to TM adoption in women healthcare.

For technology

developing and designing a user-friendly interface with diverse language options, basic compatibility and high level of confidentiality is the foremost to overcome technological barrier; Innovative data analytic approaches for personalized and customized healthcare devices/interventions/applications; inculcating self-tracking sensor technologies for detection of various health issues in form of everyday wearables like watches, jewellery, spectacles, shoes etc can prove to be highly acceptable and useful.

DISCUSSION AND FUTURE STUDY

With the strengthening of ICT, use of TM in women healthcare can prove to be lucrative concept. It has potential to reduce the gaps between demand and supply of healthcare services. Digital innovation and transformation need persistence, resilience and most importantly the much-needed investment on a sustained basis. But the investment around women healthcare has been so miniscule that we are still very much talking over the walk and not walking the talk. Though traditional hospitals and clinicians do an outstanding job of treating the patient, they have not been able to extend their reach beyond the hospital walls. “Digital technologies show tremendous potential to deliver healthcare solutions to patients, beyond the walls of the hospital and to do good if they are well designed and implemented as they are highly accessible and can allow scale to be achieved at low cost” (Bacchus et al., 2019).

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.

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