

Applications of m-Health and e-Health in Public Health Sector: The Challenges and Opportunities

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While the use of mobile phone (MPs) has become commonplace in banking, railways, airlines and insurance etc., the health sector has been somewhat slow in adopting MP technologies into routine operations. Such use can benefit patients and providers alike by enhancing the access to health care.¹ Mobile Health (m-H) is a recent term for “medical and public health practice supported by mobile devices, such as mobile phone, patient monitoring devices and another wireless device”. For example, for chronic diseases, monitoring of blood pressure/blood sugar/ weight/electrocardiography (ECG) etc has already been tried.

The advantage of m-H is that it is a simple, low cost and immensely user-friendly service. It has a potential to enhance the speed and accuracy of healthcare delivery. In fact, in m-H field, there has been remarkable and dynamic progress. The range of MP applications is continuously expanding. m-H provides real-time access to health information to empower health workers as well as the public at large. This assumes importance given severe health workforce shortage in countries with the weak economy.²

The main advantage of MPs based health care seeking is that the client (caller) or the provider (receiver) can be anywhere, away from their home/office site. Unique utility of this mode of consultation would be during the night or an emergency. MPs can also be used to guide the patients for proper care, seeking appointments, checking the availability of doctors, discussing private and sensitive matters, IEC activities, counselling etc. A unique feature of MPs is that is Short Messaging Service (SMS) can also be used for prescriptions. State health services doctors are already using mobile phones for monitoring various health programs. Use of mobile phone has been reported in private sectors also, e.g. MPs are being used in urban areas by private practitioners for giving appointments and emergency consultations.³

In this context, E-Health (e-H) has been defined as “Provision of health services through non-traditional Electronic Means”. E-Health, the use of information and communication technologies (ICT) for health, is one of the most rapidly growing areas of health today. Use of internet has also quickly and radically transformed many aspects of society by facilitating widespread sharing of information and creating new relationships between patients and healthcare professionals Health-related behaviour of people has also

been affected by the use of internet-based information.⁴

The current trends indicate that in the 21st century, hospitals will involve themselves more and more into remote consultations, electronic retrieval, referral, disease mapping, online record keeping, E-registration of patients and ICT based patient information system. Accordingly, health informatics has emerged as a separate discipline in today’s society. It involves use of computers and communication technology to acquire, store, analyse, communicate, display medical and health information to facilitate understanding, improve accuracy, timeliness and reliability of decision making in the healthcare field.⁵

Apart from the role of m-H in service provision, there is plenty of scope of its use in changing the behaviour of people.⁶

Apart from the above-mentioned use, two-way applications have been developed for data access programs such as remote data collection, access to client records, access to health information databases, census taking, and electronic health records creation and storage. During disease outbreaks or other emergency situations also, MPs can help in rapid communication for timely intervention.⁷

Given the above mentioned diverse experience, Indian Government has already adopted ‘global best practices’ on m-H which can improve health outcomes. Such m-H related strategies are harmoniously aligned with existing e-H initiatives as well as with the broader health priorities. Any m-H initiative should be integrated with the existing health care delivery system.

There are at least fifteen active mHealth pilot projects in India carried out by some state governments and NGOs as part of an m-Governance initiative and a few sporadic projects have been carried out by others as well.

Projects include use of mobile games to enhance HIV/AIDS awareness, use of handheld devices to collect raw real-time health data which were transmitted to the Health Information System Database. Mobile phones are also used to send daily health alerts and to track Disease and Epidemic Outbreaks.

m-H presents tremendous opportunities to have a definite favourable impact on global health. By help of mobile phones we can able to check refractive errors, here it is used as a microscope. We can ma-

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nipulate Digital Imaging and Communications in Medicine (DICOM) images. Now it is used to see ECG, used to hear heart sounds and used to connect blue tooth enabled sensors and a Body Area Network to a physician remotely.

Mobile phones can also store mobile Personal Health Record(m-PHR) and enable access to drug interactions. However, there is a long way to go before a mobile phone becomes a hand-held hospital.

Still, there are many challenges in this area. Huge volume and fragmented market, lack of awareness among public, poor infrastructure and data security concerns, low expectations from healthcare staff and lot of unattractive manual intervention are emerged as key challenges for m-Health adoption in India. Attitudinal barriers of health care providers to m-H also need to be addressed. There is also an issue of technical barrier in the form of doubts about the quality of data entry and analysis. There is also a need to keep the end user in mind while designing m-H services, i.e. Prevailing work culture (HW perspective) and ease of use (HW and people's attitude).

m-H is more effective when tailored to specific social/ ethnic/demographic group using colloquial language. There is a need for a clear policy on this matter. Legal aspects are involved in the privacy of citizens is implicated in the delivery of m-H.²

If implemented strategically and systematically, m-H can revolutionise the scenario of the health care delivery system. m-H has the potential to provide virtually any MP owner with medical expertise and knowledge in real-time. While there are huge opportunities for mHealth in theory, realising them will not be easy.⁴ Moreover, basic market research is still lacking; best practices are yet to be catalogued, optimal policy engagement policy engagement is still missing, advocacy is yet to take off, and public-private partnership is however to be cultivated. Multi-stakeholder collaboration is needed more.

India needs mHealth to provide care and compensate the already deficient healthcare workforce and infrastructure. The country does not

meet the minimum WHO recommendations for healthcare workforce and bed density. A large segment of the low-income group lacks access to quality healthcare. It is imperative to leverage newer ways like m-Health to make quality and affordable healthcare accessible to everyone.

mHealth should be delivered in combination with other mServices including mCare, mServices, mSurveillance and mLearning. The fruitful result from mHealth will depend on creating the right 'fit' between mHealth applications and healthcare needs; in other words, mHealth should be need-driven not technology-driven.⁸

REFERENCES

1. m-Government [Internet]. OECD Publishing; 2011 [cited 2018 Mar 15]. Available from: http://www.oecd-ilibrary.org/governance/m-government-mobile-technologies-for-responsive-governments-and-connected-societies_9789264118706-en
2. WHO Global Observatory for eHealth. MHealth: new horizons for health through mobile technologies. Geneva: World Health Organization; 2011.
3. Ventola CL. Mobile Devices and Apps for Health Care Professionals: Uses and Benefits. *Pharm Ther.* 2014;39(5):356-64.
4. Agarwal S, Perry HB, Long LA, Labrique AB. Evidence on feasibility and effective use of mHealth strategies by frontline health workers in developing countries: systematic review. *Trop Med Int Health.* 2015;20(8):1003-14.
5. Meyer B, Car J, Atherton H, McKinstry B. Email for communicating results of diagnostic medical investigations to patients. *Cochrane Database Syst Rev.* 2009;(3).
6. Free C, Phillips G, Galli L, Watson L, Felix L, Edwards P, *et al.* The Effectiveness of Mobile-Health Technology-Based Health Behaviour Change or Disease Management Interventions for Health Care Consumers: A Systematic Review. *PLoS Med* [Internet]. 2013 Jan 15 [cited 2018 Mar 15];10(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3548655/>
7. Bouri N, Ravi S. Going Mobile: How Mobile Personal Health Records Can Improve Health Care During Emergencies. *JMIR MHealth UHealth* [Internet]. 2014 Mar 5 [cited 2018 Mar 15];2(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4114425/>
8. Bhattacharya S, Singh A. Opportunity of Health Sector in IT Applications-A Case Study from Tribal Area of West Bengal. *Int. J. Health Care Edu. & Med. Inform.* 2016;3(1):28-31.

Cite this article : Bhattacharya S, Kumar A, Kaushal V, Singh A. Applications of m-Health and e-Health in Public Health sector: The Challenges and Opportunities. *Int J Med Public Health.* 2018;8(2):56-7.