

Understanding the Role and  
Potential of M-Health during  
Covid-19 Crisis in India

PART

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# Implementation of E-Health policies in India: Contrast and Reality

## PART 3

E-HEALTH INITIATIVES BY GOVERNMENT OF India promise to ensure increased usage of Information and Communication Technology (ICT) in healthcare sector<sup>1</sup>. The initiatives aim towards improving accessibility, quality and affordability of services being offered, as well as monitor the progress in delivery of health entitlements to citizens<sup>2</sup>. The medical facilities have been made available through web, mobile applications, SMS and call centre services<sup>3</sup>. With rapid mobile phone penetration in India<sup>4</sup>, the expectations for increasing accessibility to healthcare have shot up. However, the results on ground indicate that we have a long and difficult path to tread on.

Both M-health and telemedicine facilities were introduced to deliver healthcare benefits equitably throughout the population of India and equitable distribution of healthcare would come by increasing affordability of services. The telemedicine and e-health tools were expected to reach those nooks and corners of the country where our public health system failed due to social, economic or geographical barriers, for example the rural areas or hilly regions of India. Sadly, due to digital divide the goal of equitable distribution of healthcare services remain unfulfilled<sup>5</sup>. Besides the areas where the services reach, affordability quotient remains fairly high while delivering primary healthcare but not secondary<sup>6</sup> or tertiary<sup>7,8</sup>. Through SMS based information and online training of health workers (ASHA), m-health and telemedicine have been successful in preventing maternal and child mortality, have spread awareness regarding deadly diseases such as Tuberculosis, AIDS etc., and also promoted local health management in communities<sup>9,10</sup>. However an affordable curative caregiving remains a distant dream, given that 40% of these initiatives were aimed at strengthening tertiary care delivery<sup>11,12</sup>.

The e-health and telemedicine services also promise to increase efficiency in healthcare by cutting down unnecessary diagnostic or therapeutic interventions through enhanced communication between the patients and healthcare establishments. But due to slow internet speed in the remote parts of the country<sup>13</sup> this facility remains underutilized.

<sup>1</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>2</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>3</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>4</sup> Bassi, A., John, O., Praveen, D., Maulik, P.K., Jha, V. (2016), mhealth Interventions for Health System Strengthening in India, A Scoping Study Report; The George Institute for Global Health India. Retrieved from: [https://www.georgeinstitute.org.in/sites/default/files/scoping\\_health\\_report\\_final\\_uploaded.pdf](https://www.georgeinstitute.org.in/sites/default/files/scoping_health_report_final_uploaded.pdf)

<sup>5</sup> India's on a digital sprint that is leaving millions behind, BBC News (Oct, 2019), Retrieved from: <https://www.bbc.com/news/world-asia-india-49085846>

<sup>6</sup> Secondary healthcare is the second tier of health system where patients/clients come to, after having been referred by the doctors in primary healthcare unit. Examples of secondary healthcare unit could be District Hospitals and Community Health Centre at block level.

<sup>7</sup> Tertiary care is usually for inpatients, who upon getting a referral from a primary or secondary health professional seek advanced medical investigation and treatment. Examples could be cancer care, psychiatric care etc.

<sup>8</sup> Prinja, S., Bahuguna, P., Gupta, A., Nimesh, R., Gupta, M., Thakur, T.S. (2018), Cost effectiveness of mHealth intervention by community health workers for reducing maternal and newborn mortality in rural Uttar Pradesh, India, Cost Effectiveness and Resource Allocation, Retrieved from: <https://resource-allocation.biomedcentral.com/articles/10.1186/s12962-018-0110-2>

<sup>9</sup> Prinja, S., Bahuguna, P., Gupta, A., Nimesh, R., Gupta, M., Thakur, T.S. (2018), Cost effectiveness of mHealth intervention by community health workers for reducing maternal and newborn mortality in rural Uttar Pradesh, India, Cost Effectiveness and Resource Allocation, Retrieved from: <https://resource-allocation.biomedcentral.com/articles/10.1186/s12962-018-0110-2>

<sup>10</sup> Bassi, A., John, O., Praveen, D., Maulik, P.K., Panda, R., Jha, V. (Oct, 2018), Current Status and Future Directions of mhealth interventions for Health System Strengthening in India: Systematic Review, Journal of Internet Medical Research, Retrieved from: <https://mhealth.jmir.org/2018/10/e11440/#ref142>

<sup>11</sup> Tertiary care is usually for inpatients, who upon getting a referral from a primary or secondary health professional seek advanced medical investigation and treatment. Examples could be cancer care, psychiatric care etc.

<sup>12</sup> Bassi, A., John, O., Praveen, D., Maulik, P.K., Jha, V. (2016), mhealth Interventions for Health System Strengthening in India, A Scoping Study Report; The George Institute for Global Health India. Retrieved from: [https://www.georgeinstitute.org.in/sites/default/files/scoping\\_health\\_report\\_final\\_uploaded.pdf](https://www.georgeinstitute.org.in/sites/default/files/scoping_health_report_final_uploaded.pdf)

<sup>13</sup> A Rural Broadband Policy Framework providing guidance to address the 'Digital Divide', Rural Broadband Policy Framework: Connecting The Unconnected, Alliance for Affordable Internet (2020), Retrieved from: <https://a4ai.org/rural-broadband-policy-framework/>

Quality of a service cannot be determined solely by the competition between service providers. There are several contributing factors such as accessibility, information standard, usability/user friendliness, security, trust, responsiveness and system integration

Government of India also expects to improve the quality of healthcare through e-health facilities by not only cutting down cost and response time, but also bringing out several players in the market and the customers (patients) can choose according to their needs<sup>14</sup>. This will allow comparison between providers and customer feedback would allow quality assurance, thus directing them to best providers in business<sup>15</sup>. These claims of efficiency in healthcare would further be established through rigorous evaluation<sup>16</sup>.

However, the idea of quality assurance which has been stated by the government seems faulty. Quality of a service cannot be determined solely by the competition between service providers. There are several contributing factors such as accessibility, information standard, usability/user friendliness, security, trust, responsiveness and system integration<sup>17</sup>.

In the above discussion it has been stated that India like many other developing countries is plagued by digital divide which definitely compromises on the quality of digital service being received by the marginal areas of the country (rural areas, states in the North East etc.)<sup>18</sup>. Consumers (patients) in many parts of the country fail to use features such as patient doctor interaction, health information updates etc. due to poor internet connectivity. India therefore does not fare well in terms of accessibility to m-health or telemedicine. Moreover, accessibility is also thwarted by pre-existing social divisions like gender, caste, religion etc. each of which act in combination with one another to exacerbate the complexity of the problem<sup>20</sup>. To put it simply, one can say that an upper caste Hindu woman would face less accessibility issues in terms of resources than a lower caste Muslim female, given they are from similar economic background.

It is very important that the health information being shared by the mobile applications is comprehensible to the receivers. There are linguistic and socio-cultural barriers which prevent the information from reaching the farthest corners of India as was expected under e-health services<sup>21</sup>. Many foreign applications which provide services in India do not have local language as an option to communicate with the users. Majority of Indians receive primary education in their respective regional language while many of the foreign applications get generated in English speaking countries like United States of America, United Kingdom, Canada etc. or countries where English is spoken widely and fluently like in Hong Kong or Singapore<sup>22</sup>. This has led to “Anglo Saxon linguistic and cultural hegemony” with many other culturally relevant content being absent from the internet<sup>23</sup>. To counter this issue, India’s IT department had launched a web-based translation facility in 2008 to make

<sup>14</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>15</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>16</sup> [https://www.nhp.gov.in/e-health-india\\_mty](https://www.nhp.gov.in/e-health-india_mty)

<sup>17</sup> Hadwich, K., Georgi, D., Tuzovic, S., Buettner, J., Bruhn, M.(2010), Perceived quality of e-health services: A conceptual scale development of e-health service quality based on the C-OAR-SE approach, International Journal of Pharmaceutical and Healthcare Marketing, Vol. 4, No. 2, pp. 112-136. Retrieved from: <file:///C:/Users/user/Desktop/percieved%20quality%20of%20e%20health.pdf>

<sup>18</sup> A Rural Broadband Policy Framework providing guidance to address the ‘Digital Divide’, Rural Broadband Policy Framework: Connecting The Unconnected, Alliance for Affordable Internet (2020), Retrieved from : <https://a4ai.org/rural-broadband-policy-framework/>

<sup>19</sup> Bridging the Digital Divide, The Sentinel (July, 2020), Retrieved from: <https://www.sentinelassam.com/editorial/bridging-the-digital-divide-486553>

<sup>20</sup> Livingston, S., Nandi, A., Banaji, S., Stoilova, M. (2017), Young adolescents and digital media; Uses, risks and opportunities in low and middle-income countries: a rapid evidence review, Gender & Adolescence: Global Evidence. Retrieved from: <https://www.gage.odi.org/publication/digital-media-risks-opportunities/>.

<sup>21</sup> Prasad, K.(2012), E-Governance Policy for Modernizing Government through Digital Democracy in India, Journal of Information Policy, Vol. 2, pp. 183-203, Penn State University Press. Retrieved from <https://pdfs.semanticscholar.org/a8b3/ca2e893db594649d507872923cc37d79e1b0.pdf>

<sup>22</sup> Prasad, K.(2012), E-Governance Policy for Modernizing Government through Digital Democracy in India, Journal of Information Policy, Vol. 2, pp. 183-203, Penn State University Press. Retrieved from <https://pdfs.semanticscholar.org/a8b3/ca2e893db594649d507872923cc37d79e1b0.pdf>

<sup>23</sup> Prasad, K.(2012), E-Governance Policy for Modernizing Government through Digital Democracy in India, Journal of Information Policy, Vol. 2, pp. 183-203, Penn State University Press. Retrieved from <https://pdfs.semanticscholar.org/a8b3/ca2e893db594649d507872923cc37d79e1b0.pdf>

The trust and bonding which health workers build with communities over a period of time cannot possibly be substituted with any mobile application

translations from English to a desired regional language<sup>24</sup>. This will hopefully help in removing linguistic limitations thereby increasing accessibility to health related information.

Mobile devices are also being used to manage data related to people's health. In 2018 common application software (ICDS-CAS) was rolled out under Poshan Abhiyan to bring efficiency in data management and ensure better monitoring of progress<sup>25</sup>. The software is pre-loaded into the mobile devices given to Anganwadi workers<sup>26</sup>. But the technological leap doesn't help in overcoming the socio-cultural barriers while engaging with the target population.

A qualitative study conducted in two states, Bihar and Madhya Pradesh to examine the perception of CAS exposed the socio-cultural challenges at community level, where the unequal gender and power dynamics in rural areas of the states affected the data collection<sup>27</sup>. Married women in ghunghat (veil) were not able to discuss their issues freely in front of their in-laws<sup>28</sup>. Women were also usually very busy with the household chores to be able to spare time for the Anganwadi Workers<sup>29</sup>. Further, the trust and bonding which health workers build with communities over a period of time cannot possibly be substituted with any mobile application<sup>30</sup>.

Beneficiaries also faced technical challenges while entering data, like heating or freezing of the phone, network glitches and low battery level<sup>31</sup>. They found the videos informative but not as effective as an interpersonal chat<sup>32</sup>. Such technical methods of communication might erode the pre-existing trust between the health workers and beneficiaries as some of them complained of not being able to reveal the most intimate information to a software<sup>33</sup>.

Many physicians too consider e-health service as an attack on their credibility<sup>34</sup>. The patient-physician interaction through an electronic medium will give rise to many new challenges. Physicians like health workers establish rapport with their patients in physical interactions. Physical presence of patients also helps in making accurate diagnoses and suggesting treatment alternatives<sup>35</sup>. However with the new e health facility, communications are bound to get mechanical with additional problem of

<sup>24</sup> Prasad, K.(2012), E-Governance Policy for Modernizing Government through Digital Democracy in India, Journal of Information Policy, Vol. 2, pp. 183-203, Penn State University Press. Retrieved from <https://pdfs.semanticscholar.org/a8b3/ca2e893db594649d507872923cc37d79e1b0.pdf>

<sup>25</sup> Verma, A. (Feb, 2020), The ICDS – Common Application Software: What are the Promises & Limitations?, FACTLY, Retrieved from: <https://factly.in/the-icds-common-application-software-what-are-the-promises-limitations/>

<sup>26</sup> Verma, A. (Feb, 2020), The ICDS – Common Application Software: What are the Promises & Limitations?, FACTLY, Retrieved from: <https://factly.in/the-icds-common-application-software-what-are-the-promises-limitations/>

<sup>27</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

<sup>28</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

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<sup>30</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

<sup>31</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

<sup>32</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

<sup>33</sup> Gopalakrishnan, L., Buback, L., Fernald, L., Walker, D., Diamond-Smith, N.(Jan, 2020), Using mHealth to improve health care delivery in India: A qualitative examination of the perspectives of community health workers and beneficiaries, Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227451>

<sup>34</sup> Hadwich, K., Georgi, D., Tuzovic, S., Buettner, J., Bruhn, M.(2010), Perceived quality of e-health services: A conceptual scale development of e-health service quality based on the C-OAR-SE approach, International Journal of Pharmaceutical and Healthcare Marketing, Vol. 4, No. 2, pp. 112-136. Retrieved from: <file:///C:/Users/user/Desktop/percieved%20Quality%20of%20e%20health.pdf>

<sup>35</sup> Hadwich, K., Georgi, D., Tuzovic, S., Buettner, J., Bruhn, M.(2010), Perceived quality of e-health services: A conceptual scale development of e-health service quality based on the C-OAR-SE approach, International Journal of Pharmaceutical and Healthcare Marketing, Vol. 4, No. 2, pp. 112-136. Retrieved from: <file:///C:/Users/user/Desktop/percieved%20Quality%20of%20e%20health.pdf>



Privacy and confidentiality are the key concerns of patients while accessing e-health applications, however due to a lack of data protection regulation in India the concerns are not addressed

poor connectivity. Physicians will also face administrative burden while answering large volumes of email coming from patients, which in turn would cut down the time allotted for treating them<sup>36</sup>.

Some scholars have expressed concerns related to privacy since health related information is considered as highly sensitive data<sup>37</sup>. Privacy and confidentiality are the key concerns of patients while accessing e-health applications<sup>38</sup>, however due to a lack of data protection regulation in India the concerns are not addressed<sup>39</sup>. Even the data protection bill which has been tabled before the parliament recently, doesn't contain explicit provisions on algorithmic decision making which includes the right of a person to opt in or out of a mobile application, quite unlike the European Union's Data Protection Regulation<sup>40-41</sup>.

Then again e-health is a relatively new and rapidly evolving field<sup>42</sup>. When we try assessing the promised outcomes we don't get many published works to substantiate the efficacy of e-health services in India. However in a twist of fate, the COVID-19 pandemic has brutally handicapped the traditional healthcare domain marked by physical consultation, generating the requirement to physically distance oneself from people to prevent the infection and such a situation desperately calls for an adoption of digital health<sup>43</sup>. Teleconsultations have also increased during the pandemic as many doctors are getting infected due to insecure exposure to the virus<sup>44</sup>. M-health services through SMS and mobile applications are helping in health information exchange. Therefore it is certain that post pandemic world will see a stark change in medical infrastructure. E-health domain in spite of its many flaws will get established as an alternate field in medicine<sup>45</sup>. Though we can expect a surge in researches exposing the limitations in e-health and attempts to work on the limitations while delivering the promise of quality, accessibility and affordability of services.

<sup>36</sup> Hadwich, K., Georgi, D., Tuzovic, S., Buettner, J., Bruhn, M.(2010), Perceived quality of e-health services: A conceptual scale development of e-health service quality based on the C-OAR-SE approach, *International Journal of Pharmaceutical and Healthcare Marketing*, Vol. 4, No. 2, pp. 112-136. Retrieved from: <file:///C:/Users/user/Desktop/percieved%20quality%20of%20e%20health.pdf>

<sup>37</sup> Hadwich, K., Georgi, D., Tuzovic, S., Buettner, J., Bruhn, M.(2010), Perceived quality of e-health services: A conceptual scale development of e-health service quality based on the C-OAR-SE approach, *International Journal of Pharmaceutical and Healthcare Marketing*, Vol. 4, No. 2, pp. 112-136. Retrieved from: <file:///C:/Users/user/Desktop/percieved%20quality%20of%20e%20health.pdf>

<sup>38</sup> Bernhardt, J.M., Lariscy, R.A.W., Parrott, R.L., Silk, K.J., and Felter, E.M. (2002), "Perceived Barriers to Internet-based Health Communication on Human Genetics," *Journal of Health Communication*, Vol. 7, No. 4, 325-340.

<sup>39</sup> Nandi, A. (2019), Artificial Intelligence in Education in India: Questioning Justice and Inclusion, *Global Information Society Watch*, Artificial intelligence: Human rights, social justice and development. Retrieved from: [https://giswatch.org/sites/default/files/gisw2019\\_artificial\\_intelligence.pdf](https://giswatch.org/sites/default/files/gisw2019_artificial_intelligence.pdf)

<sup>40</sup> Nandi, A. (2019), Artificial Intelligence in Education in India: Questioning Justice and Inclusion, *Global Information Society Watch*, Artificial intelligence: Human rights, social justice and development. Retrieved from: [https://giswatch.org/sites/default/files/gisw2019\\_artificial\\_intelligence.pdf](https://giswatch.org/sites/default/files/gisw2019_artificial_intelligence.pdf)

<sup>41</sup> Das, S.( Jul, 2018 ), 8 Differences Between Indian Data Protection Bill And GDPR!, *CIO&LEADER*, Retrieved from: <https://www.cioandleader.com/article/2018/07/30/8-differences-between-indian-data-protection-bill-and-gdpr>

<sup>42</sup> Car, J., Black, A., Anandan, C., Cresswell, K., Pagliari, C., McKinstry, B., Procter, R., Majeed, A. and Sheikh, A. (Jan, 2011), "The Impact of e-Health on the Quality & Safety of Healthcare: A Systemic Overview", *PLoS Medicine*, Retrieved from: <https://journals.plos.org/plos-medicine/article?id=10.1371/journal.pmed.1000387>

<sup>43</sup> Saxena, P.(May, 2020), How is COVID-19 Impacting the mHealth Sector?, *appinventiv*, Retrieved from: <https://appinventiv.com/blog/coronavirus-impact-on-mhealth/>

<sup>44</sup> Mabiyan, R.(April, 2020), Covid-19 lockdown 2.0: telemedicine in India to see continued growth, *ET Healthworld.com*, Retrieved from: <https://health.economicstimes.indiatimes.com/news/health-it/covid-19-lockdown-2-0-telemedicine-in-india-to-see-continued-growth/75172147>

<sup>45</sup> Saxena, P.(May, 2020), How is COVID-19 Impacting the mHealth Sector?, *appinventiv*, Retrieved from: <https://appinventiv.com/blog/coronavirus-impact-on-mhealth/>





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