

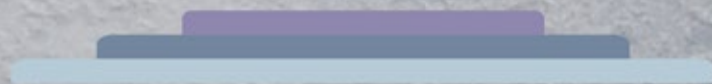
Enhancing Impact through Technology Enabled Healthcare

From Consensus to Action



The George Institute
for Global Health India

education
videoconferencing
telecommunications
self management softwares
primary healthcare treatment
India education
GPS telemedicine mobile India
service delivery disease
self care primary healthcare treatment
India telemedicine risk factor
MCH GPS mobile India support
mLearning service delivery disease
GIS self care risk factor IVR
MCH mLearning records support
messaging reminder IVR
messaging SMS mFinance
messaging NCDs reminder IOS
MMS NCDs mFinance
mMSt
Tablet
CDSS
apps
email
email
android



Background

Rapid technological innovations have transformed the capabilities of a mobile phone from being a tool for communications to that of a multi-purpose device across a segment of services including health. Frugal innovations and economies of scales have resulted in drastic cost reductions enabling higher ownership of mobile phones. In 2015, India reached a subscriber base of 1 billion mobile subscribers, with the second largest base of 220 million active smartphone users globally (Forbes, 2016). Of note, the mobile telecommunication penetration is strong in rural areas as well with about 42% of all subscribers (The Hindu, 2016). As the health systems in India are still evolving with significant demand to supply gaps in health service delivery, the proliferation of mobile phone networks in urban and rural areas presents an opportunity for utilization of mobile health (mHealth) technology to realign the healthcare delivery and strengthen the health system. This scenario is applicable not only to India, but also to other emerging countries with similar health system level challenges. A broad range of public health initiatives are currently tapping the potential of mobile devices for delivering health care at low cost, such as for maternal and child health, management of NCDs, HIV and tuberculosis prevention and control, as well as collecting data for disease surveillance. The capabilities of mHealth technologies are rapidly evolving and if tapped into appropriately possess an immense opportunity for massive impact on the health sector

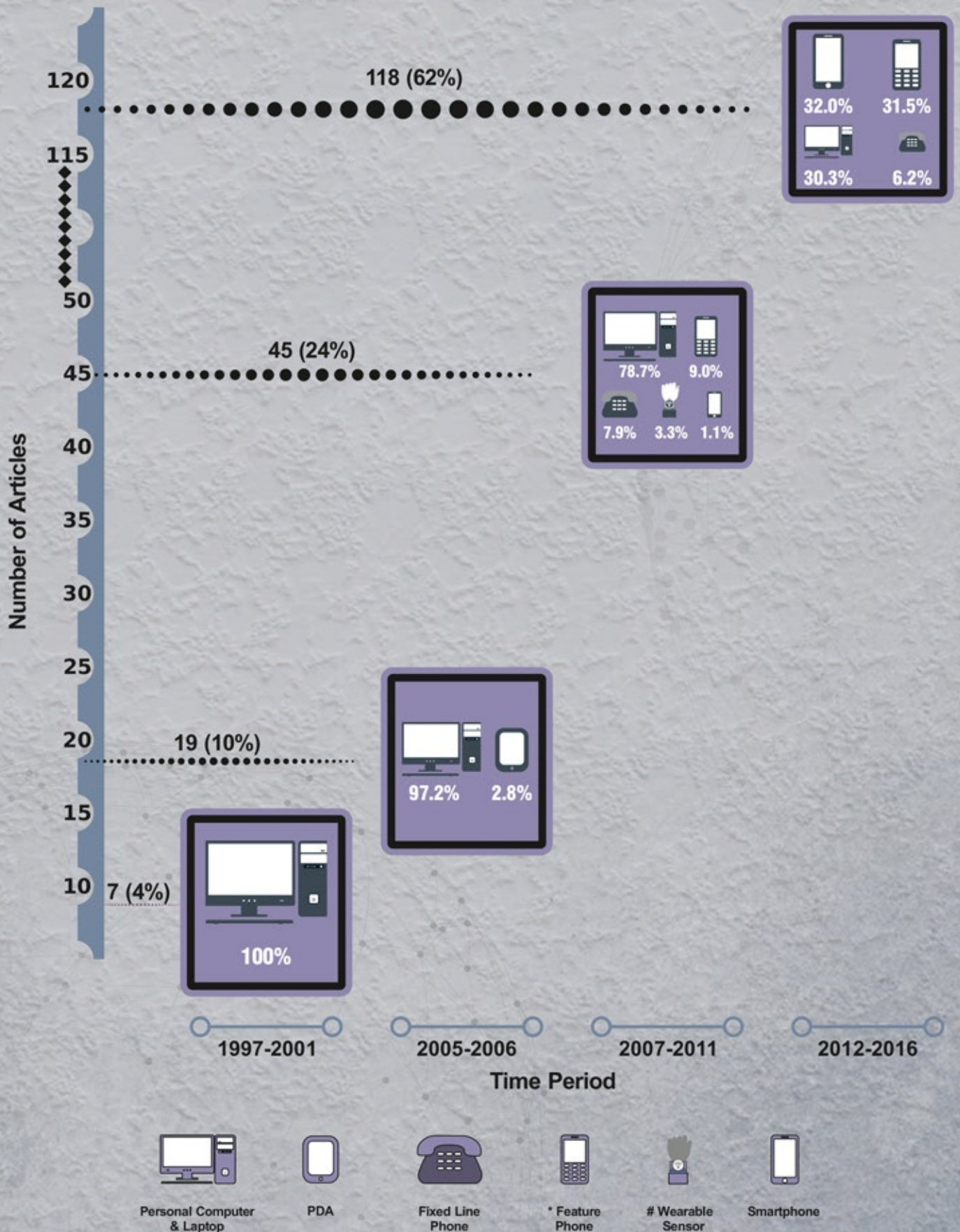
Scoping Study on mHealth Initiatives in India

The George Institute for Global Health, India conducted a study to assess the existing status of mHealth initiatives in India. The study presents the changing trends of the mHealth initiatives in terms of their disease focus, preference of IT device, targeted health system domain and beneficiaries. A search of the literature (for articles within the period of 1997 to August 2016) that had mobile device as a primary intervention (mHealth or telemedicine) was conducted on electronic bibliographic databases. A total of 4792 articles were screened out of which 189 were included for synthesis. 'Google Play Store' and 'Apple Store' were searched for apps related to top 10 causes of death (as per GBD, 2015 data) and five common NCDs including cancer, diabetes, cardiovascular diseases and chronic respiratory diseases, depression and anxiety disorders. Apps supporting practice of medicine and public health for the identified diseases were selected. A total of 4600 apps were identified based on the title of which 1159 were selected. The selected academic literature were examined in relation to intended objective of supporting or strengthening the Indian health system. For this, we used the WHO Health System Building Block Framework, to arrange the abstracted information.



Findings of the Scoping Study

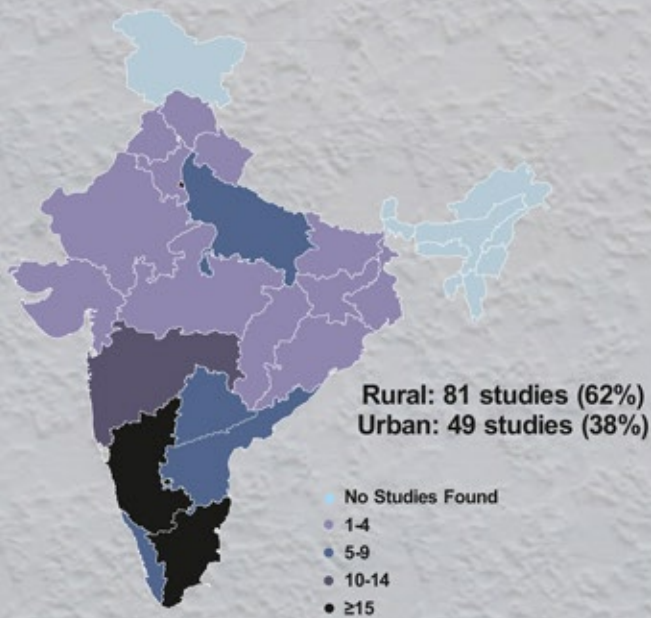
mHealth Initiatives Published in Peer-reviewed Journals (January 1997 – August 2016)



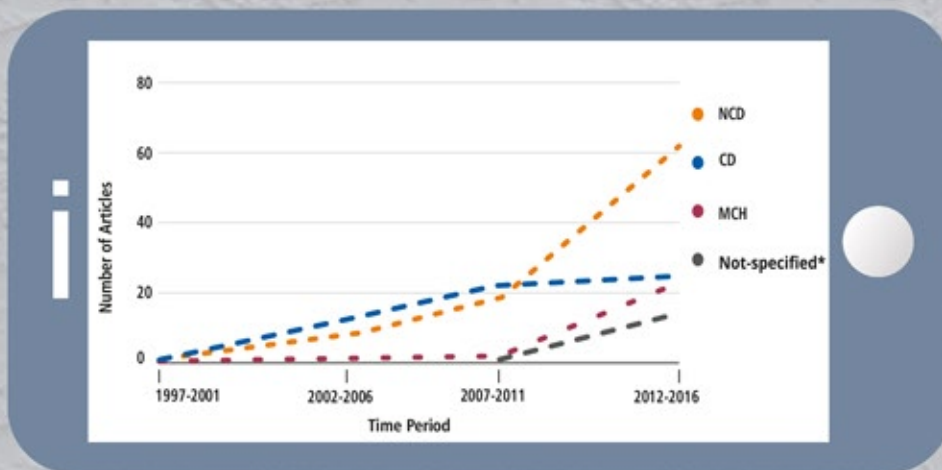
Year-wise distribution of the published articles & changing preference of device for intervention delivery (n=189)

04 *A mobile phone having features such as the ability to access the Internet but lacks the advanced functionality of a smartphone.
 # Wearable sensors are used to gather physiological and movement data that enables patient's status monitoring.

Evaluation status of the published articles (n=189)



Geographic distribution of the study sites of the published articles (n=130*)



Changing focus of the published articles over time (n=189)



mHealth initiatives targeting different health system building blocks (n=189)

Smartphone Apps on Health Available in Mobile App Stores

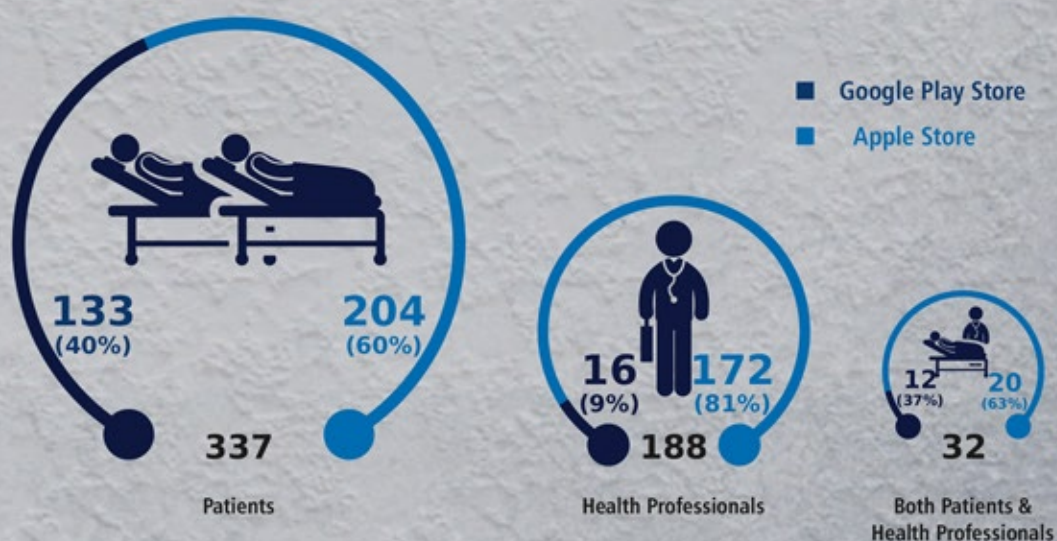
| Health Condition | Number of Apps Reviewed | |
|---|-------------------------|-------------|
| | Google Play Store | Apple Store |
| Diabetes | 247 | 138 |
| Depression & Anxiety | 198 | 25 |
| Cancer | 154 | 80 |
| Heart Diseases | 81 | 104 |
| Chronic Kidney Diseases (CKD) | 77 | 14 |
| Stroke | 42 | 14 |
| Chronic Obstructive Pulmonary Diseases (COPD) | 31 | 5 |
| Tuberculosis (TB) | 12 | 2 |
| Diarrhoea | 7 | 1 |
| Pre-term Birth | 4 | 0 |
| Respiratory Infections | 3 | 13 |
| Road Injuries | 2 | 0 |
| Total | 858 | 396 |

Health conditions & number of apps reviewed (n=1254)



App Developers

A total of 93 (11%) Google Play Store and 98 (25%) Apple Store apps were developed by healthcare organizations and professional societies while others were developed by independent developers.



Intended end users of the mobile apps (n=557)

The above figure presents the functionalities & feature related findings for apps (n=557), that include Google Play Store apps with more than 10,000 installs (n=161) & apps reviewed on Apple Store (n=396)

Consensus Conference on Technology Enabled Healthcare



Consistent with its mission of improving the health of millions of Indians, the George Institute for Global Health has been engaging in generating evidence to support the delivery of technology enabled initiatives to strengthen the existing health system in India. In continuation of this agenda, the Institute organized a Consensus Conference on Technology Enabled Healthcare on 8th December 2016 in New Delhi. This multi-stakeholder event witnessed a gathering of nearly 150 participants, including policymakers, programme planners, implementing organizations, evaluators, researchers, academician, developers of mHealth solutions and journalists.

Through plenary presentations and working group discussions, the participants deliberated on actions that are recommended for realization of full potential of mHealth initiatives, with emphasis on system integration, user experience, sustainability and scalability. The report of the scoping study presenting a comprehensive landscape of the mobile healthcare technology in India was released during the Consensus Conference. This report presents the key highlights of the Conference and recommendations for future action.



Highlights of the Consensus Conference



“The Ministry of Health and Family Welfare, Government of India has taken various disease specific mHealth initiatives. India has also tabled a resolution entitled 'mHealth using wireless technologies for public health' at the WHO Executive Board Meeting, which was supported by 35 countries. This resolution highlights the importance of mHealth for realizing the goals of sustainable development and universal health coverage.”

Shri Rajendra Pratap Gupta, Advisor to the Union Minister for Health and Family Welfare

Specific mHealth Initiatives Launched by the Ministry of Health and Family Welfare

- NHP Swasth Bharat app provides detailed information regarding healthy lifestyle, disease conditions, symptoms, treatment options, first aid and public health alerts.
- NHP Indradhanush Immunization (Vaccines tracker) app facilitates young parents in tracking the immunization of their children.
- India Fights Dengue app helps people to know about the symptoms of Chikungunya and dengue and facility to reach the blood banks.
- Kilkari app sends audio messages to the parents and is also used to train the voluntary health workers.
- eRaktKosh app gives live information about availability of blood groups at various banks.
- No More Tension app provides information about stress, which includes content with respect to details about stress, its causes, indicators and stress management techniques.
- Mera Aspataal (My Hospital app) captures patient feedback on the services received from both public and empanelled private health facilities.
- Other mobile health programmes developed include mDiabetes, mTobacco Cessation and TB management



“The Australian Government is committed to the Australia-India relationship in innovation, funded through our Australia-India Strategic Research Fund and a number of other Medtech examples in diagnostics, particularly in early detection of tuberculosis and diabetes.”

Ms. Tanya Spisbah, First Secretary, Trade & Economics, Australian High Commission

“The foreign interventions have failed in our countries, we need to address important problems. It is only when we do things from within the health system we would know the important problems. In case of LMICs it's important that the solutions are frugal, simple, low cost to produce and addressing the essentials.”

Professor Vajira Dissanayake, President Commonwealth Medical Association



The George Institute for Global Health has conducted Scoping studies in India and China. The findings of these studies have highlight the following health system challenges that could be addressed by mHealth:

- Health system governance issues
- Fragmented responsibilities between central and provincial governments
- Lack of uniformity and transparency of health information
- Inappropriate use of diagnostics information, training and therapeutics
- Fee for service
- Complexities in the reimbursement for the provision health care
- Lack of training and mal-distribution of the health work force
- Incentives for healthcare worker

Professor Anushka Patel, Chief Scientist, The George Institute for Global Health

“It is important to define the problems, which took us number of years in Andhra Pradesh, where our study SMARThealth was being implemented. When we identified the problems health workers such as ASHAs, were able to successfully screen a vast majority of population in a relatively short period of time. It is important to believe in the ability of the frontline workforce in taking different set of skills with the technology enablement.”

Dr. David Peiris, Programme Head, Primary Health Care Research, The George Institute for Global Health



Recommendations

Beyond the quick fixes for improving health outcomes and user experience

- Studies should identify community needs, take a health system approach, use technology with human and sociological interventions and target vulnerable population.
- Formative work of qualitative nature with involvement of multiple stakeholder groups should inform the development of a human-centered design.
- A collective standardized approach should be developed to monitor and qualify technology design and ensure data security.
- An mHealth regulatory framework is needed for ensuring quality of care and safeguarding user interests.
- Funding agencies should support studies that perform robust and scientific effectiveness evaluation of mHealth initiatives.

Achieving scale beyond the pilots

- Technological complexity should be avoided, and platforms that are customizable for low resource and low literacy settings should be chosen.
- A mixture of technology and human touch is essential to reach out to the patients so that direct end-to-end disease management solutions can be developed.
- User feedback mechanisms should be built in before the launch of the solution.
- Best use should be made of the data gathered to drive the processes of development, implementation and evaluation.
- Consortia should be formed for knowledge transfer, resource sharing, collective funding and advocacy.

Key to sustainable health solutions

- Scalability and sustainability should be incorporated in the solutions from the inception phase.
- Transfer of ownership to the community is strongly encouraged.
- Internet penetration should be exploited for dissemination of health information to the community and training of healthcare workers.
- Engagement with the private sector and non-traditional donors will increase the quality and the reach of mHealth solutions.

About The George Institute, India

The George Institute for Global Health was established in India in 2007 to generate high quality evidence and improve the health of millions of Indians by reducing premature deaths and disability from non-communicable diseases like cardiovascular disease, diabetes, kidney disease, stroke, mental health, and injuries. TGI India's research uses innovative approaches to create system-wide change for people at the bottom of the pyramid, develop affordable and scalable solutions, and to empower people to improve their own health. TGI also conducts research and advocacy around areas traditionally neglected by the healthcare and policy community - the health of women and girls, adolescents and promoting healthy eating.


As a global organization, the George Institute is amongst the top ranked medical research institutes in the world for impact, with researchers and collaborators around the world.



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