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M-health new mantra of making healthcare more affordable, accessible and efficient

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Abstract
Healthcare Management at beneficiaries' level has great opportunity for improvement and Its progress compared to the other sectors of India is limited. The objective of this study is to understand the need of m-health and its implantation challenges and bottlenecks in India. I had surveyed doctors' experts to understand their view, need, acceptance and readiness for m-health through a multiple structured questionnaire including 1) need of m-health towards patients, 2) support by Government for m-health, 3) Willingness of investment from patient towards the cost in the field, 4) issues related educational problems for the implementation of mHealth, 5) Policies in terminology and availability & understanding of infrastructure along with scope of expansion. The respondents answered affirmatively in these proportions where 100 % agreed on the fact the m-health is the need of the hour. The survey has also highlighted the operational problems of m-health implementation in Indiadue to its wide variety of demographic, cultural and educational, economic resources, long term policies around that.

Keywords: healthcare, m-health, patients

Introduction

The infrastructure and system for delivering healthcare are changing very fast in the modern world. An abbreviation for mobile health, m-health is an increasing and expanding phenomenon in India's health sector. In the age of artificial intelligence, m health has emerged as a sub-sector of e health, which is used for the practice of medicine and public health supported by mobile communication devices. Generally, mhealth is used for denoting the use of mobile devices, tablets, computers, smart watches and other wearable devices for health services. India has moved far ahead in health sector following the Millennium Development Goals. The area of mHealth is universal in nature for delivering health care from the most developed to the least developed economies of the world**.** The use of mobile technology in health sector in the developing world is rapidly expanding to include chronic, and communicable diseases. Technology like m-health can be useful to address the challenges of health sector in the developing countries like India. "M-health is a service or application that involves voice or data communication for health purposes between a central point and remote locations. M-Health is consumer focused because almost all customer uses mobile and they can manage their health through this. One of the key stakeholder is Doctor who is diagnosing the patient on day to day basis and I met these doctors and consolidated their opinion and their awareness, acceptability, efficiency and effectiveness of the m-health based systems in health services. The paper attempts to analyze the role of different stakeholders and make a suggestion for the improvement of health service delivery.

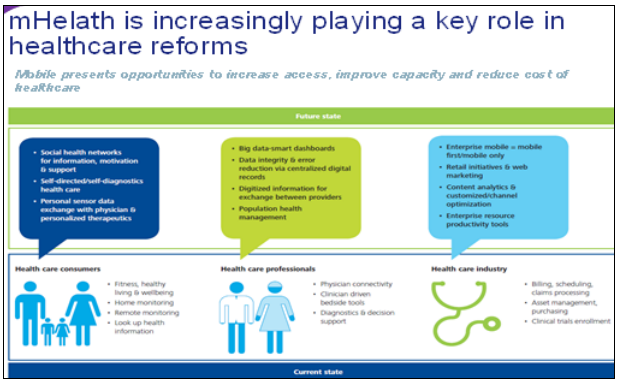

Fig 1

Review of literature

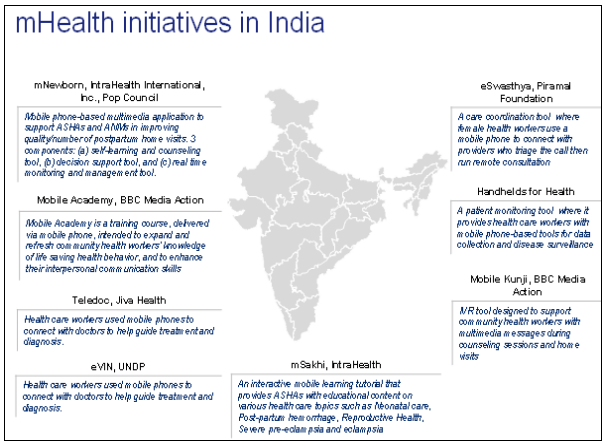

Fig 2

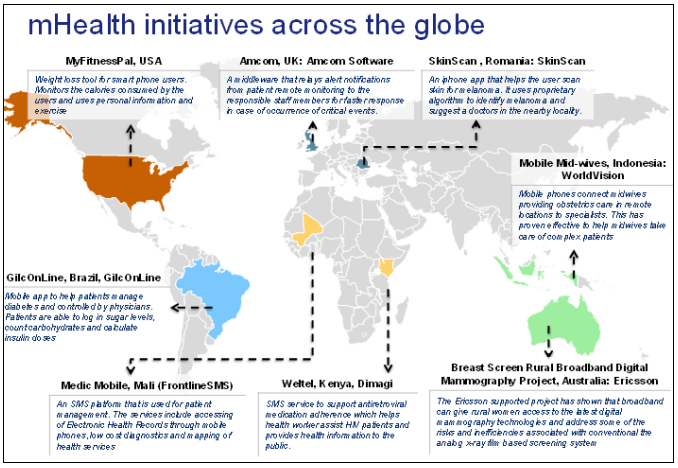

Fig 3

The number of mobile user is increasing day by day in all over the world. On the other side, most of the mobile users do not have knowledge about its health applications. The present situation is worse in the developing and the undeveloped countries because of the lack of proper education. The other side of coin is positive in the developing countries. The mobile use in health sector in the developing world is rapidly expanding to include severe and contagious diseases. M Health and other technologies such as wireless system can be useful to address the challenges of health sector. According to Ian Leslie Freng, Simon Sherrington and Danny Dicks (2011) "mHealth is an application that involves voice or data communication for health purposes between a central point and remote locations, which includes eHealth applications (if delivery over a mobile network adds utility to the application), the use of mobile phones and other devices as platforms for local health-related purposes as long as there is some use of a network." India ranks second among developing countries in the adoption of m Health. Increased adoption of mobile technology or m Health is supposed to be essential by more than half of doctors and healthcare providers in developed and emerging markets around the world including 60% in India. At this time, m Health applications in the maternal and newborn health field are in the formative stage, but rapidly evolving. The United Nations Foundation in its studies entitled "m Health for Development: The Opportunity of Mobile Technology for Healthcare in the Developing" has shown the immense potential of mobile technology in the developing countries like India. William C. Philbrick has published his report entitled "m Health and MNCH: State of the Evidence Trends, Gaps, Stakeholder Needs, and Opportunities for Future Research on the Use of Mobile Technology to Improve Maternal, Newborn, and Child Health" in 2013 showing problem in mission and strategy of the current mHealth projects.

Research Methodology

A detailed survey questionnaires was used to collect data. Data was collected on various data variables such as Mobile Health uses, missed does and prescription, key challenges, solutions and Geographic Location. Data collection was done using automated data capture software on smart phone through a online software comm Care. The survey tool was uploaded on software and downloaded on phone. Data was sent to the online database server by cellular, Wi Fi, or cable internet connection from the mobile device.

Manual for data collection

Field guide/manual was prepared before the field start and keep updating the manuals on the learning obtained from field.

Data Collection

Data was collected on Coolpad Android using Comm Care mobile application software, which facilitates online data collection.

Study Limitations

There are few limitations of the survey and should be considered at the time of interpretation of results:

- Non-Response Bias: Survey findings are based on available data.
- Interview Bias: Respondents self-reported actions related to smart phone, Patient load experience, which were not confirmed by further document review.

Key challenges during data collection

There are few challenges while conducting the survey that includes

- The physical in-convenience of transport
- The doctors or Chemist most of the time were apprehensive in sharing the information
- Due to non- availability and prior commitment, needed to conducts many revisits.
- Many times the respondent denied for conducting the interview.
- Many time the respondent was not present at the location and I have wait for him untile he comes because he or she was being the important stakeholders.
- Even sometimes the interview with them things was not smooth. In the beginning, the respondents did not co-operate properly and created problem. But we managed to established close rapport with the respondents and eventually succeeded in knowing their views and attitudes in depth.
- The interview schedule was the main tool used for collecting primary data, supplemented by field notes based on observation. Although some structured questions were included to get specific background data. The quantitative data collected through interviews was supplemented and cross-checked by qualitative data obtained though observation. Contacting the respondents and visiting their households posed serious problems.

Setting up field

Gujarat a Western Indian state covering 75,685 sq mi and its population is 60 million. The State encompasses of 33 districts and the State is doing well in Health parameters. A comparative study indicate that the State has 12th ranking on health indicator performance and lagging behind from many states including Kerala, Goa, Himachal, Punjab, Tamil Nadu, Maharashtra and Haryana.

Possession of Smart Phone	Count
Yes	30
No	0
Grand Total	30

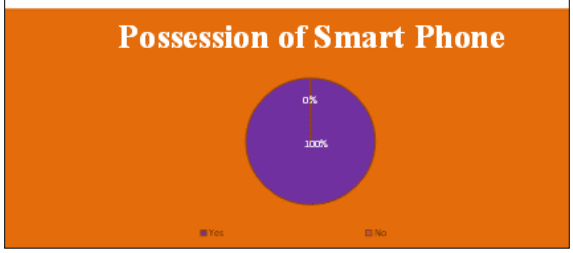

Fig 4

It was found that the 100% doctors are using smart phones, none of the doctors found without phone and none of them were carrying basic handheld device. Smartphone plays a critical role to develop communication and augment the amalgamation of care processes which further can be integrated with m-health. Hence there is possibility to motivate Doctors to use the m-health applications for their day to day management and making them more aware about therapeutic diseases so that they also further guide the patient who comes to their treatment. Addition to the Doctors can help in the new healthcare delivery models where the care delivery in rural area or where there is limited access through mobile health. m-health can resolve quite a few large problems encountered in low-income parts of the India.

It was also found that the 100% doctors are using online application duly installed in their phones. This indicates that the doctors are exposed to the android applications and would be limited challenges while adopting for themselves or recommending for others.

It was also found that the 33% doctors are using e-Health/ m-health online application duly installed in their phones and 67% doctors uses other applications including Social Media, Banking, e-Education, News etc. This data point indicates that the doctors are exposed to m-health android applications as well along with other applications. Though the percentage is not high but considered as one of the positive indicators about the m-health uses point of view in the Country.

Usages of Online Application	Count
Yes	30
No	0
Grand Total	30

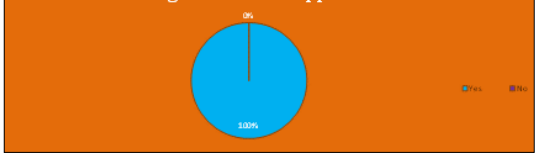

Fig 5

Usages of Applications	E- Health & Other App	Not E-Health but other APP	Only E-Health
Yes	10	20	0
No	0	0	0
Grand Total	**10**	**20**	**0**

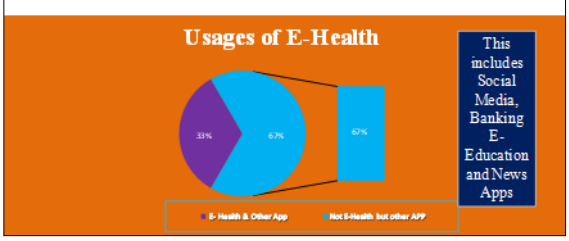

Fig 6

Missed daily dose by patient	Count
Yes	9
No	21
Grand Total	30

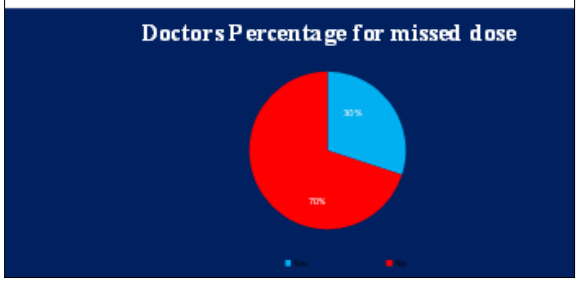

Fig 7

Lost Prescription Slips by Patient	Count
No	24
Yes	6
Grand Total	30

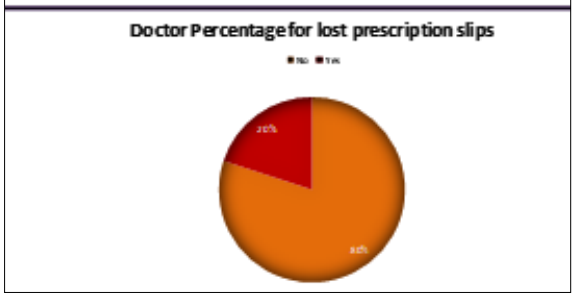

Fig 8

It was also found 70% of doctors mentioned that the patient who visited missed their daily doses and 20% of doctors mentioned that the patient lost their prescription slips while coming to their next follow visits. Hence there is great scope to improve the healthcare by leveraging technology. 90% of doctors recommended to use mobile Health Application and

agrees that this would help them to recover faster and improve the health and this can also helps in improve the challenges faced by patients including missed doses and lost of prescription slips. The technology can play a vital role here, however they have not denied that there could be implementation challenges as patient would not pay for such kind of applications.

The doctors recommended to have the application in regional language, Hindi and English as 73%, 14% and 13% respectively. There are many challenges raised by doctors while the m-health would be implemented on ground in India. The challenges includes Cost of application, Lack of Access, Lack of evidence, Lack of Knowledge, Limited Infrastructure, Limited Policy Support, Privacy and Security Reliability

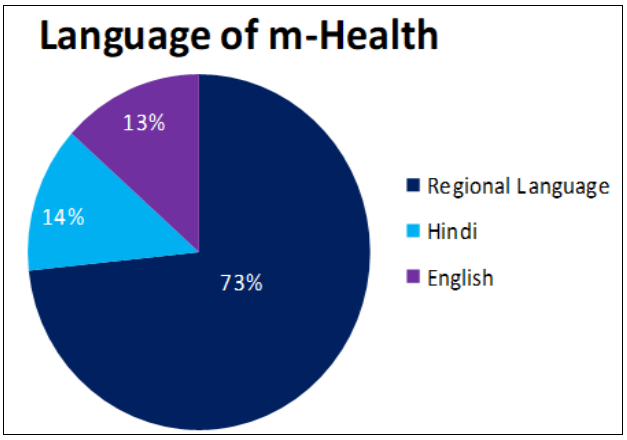

Fig 9

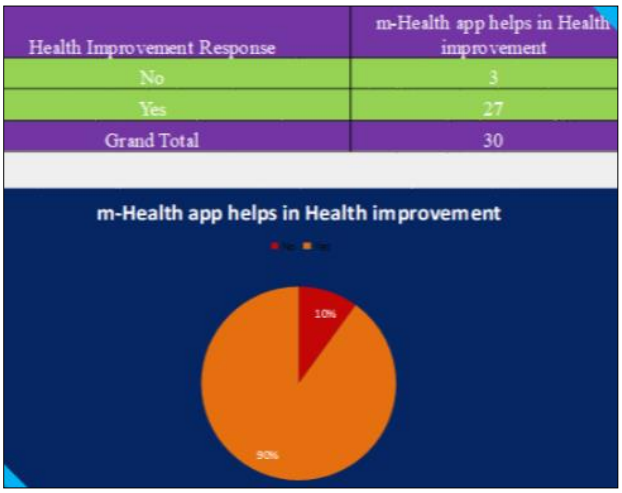

Fig 10

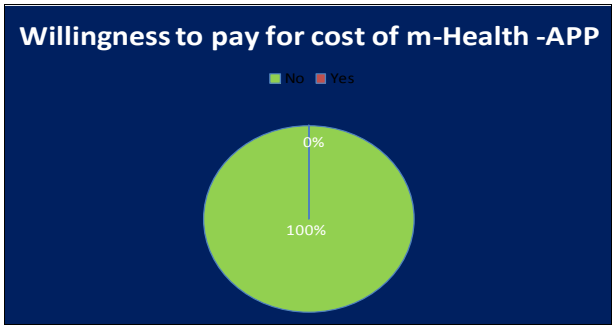

Fig 11

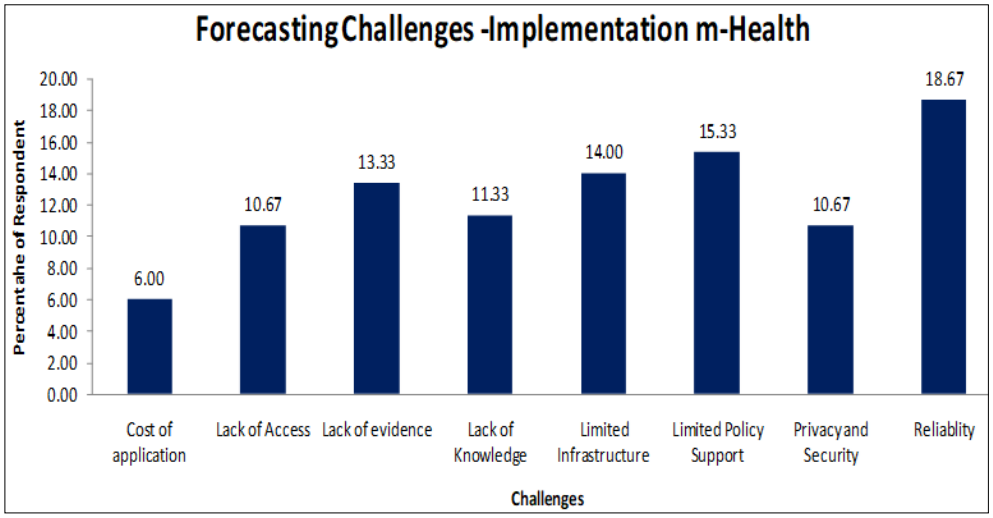

Fig 12

About 19% doctors mentioned that reliability of the m- health application would be the key challenge for implantation of the application in India. The health care data has fundamentally very important for any organization. Hence about 11% of the doctors shows apprehension on the m-health due to data privacy and security. The big data is very important for any healthcare establishment since they analyze and leverage data to expand their business and healthcare is one of the utmost favorable fields where big data can be applied. About 15% of the doctors highlighted that there are no policy documents around the mobile health both from state and center and that can become the potential road block for its implementation in India. Fourteen percentage doctors were apprehensive about the kind of infrastructure we have. These sets of doctors believe that there is lot more infrastructure readiness requirements before thinking about m-health. Many pockets of the country are without mobile and data network. About 11% doctors believes that lack of knowledge and awareness could

become the potential challenge for m-health while about 13% believes that lack of evidence about the application is the major implementation bottleneck. About 11% doctors believes that lack of access is also the key challenge while 6% of doctors mentioned that cost of the m-health application would be the key challenge.

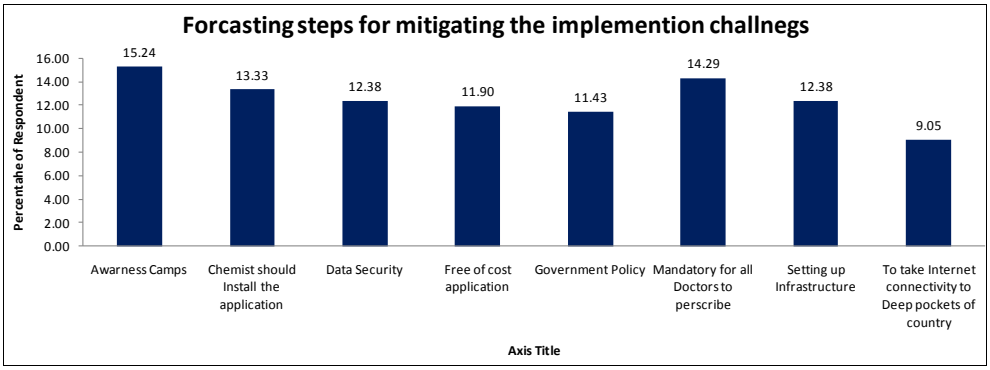

Fig 13

The doctors were asked how these key challenges could be removed and below are the key steps the doctors recommended as a part of the preventive and proactive mitigation steps:

1. About 15% doctors recommended to run the awareness campaign by government and educating people about the benefits of m-health. The government should also educate people how to use different m-health applications recommended by doctor's time to time.
2. About 13% doctors recommended that the respective application recommended by doctors to the patent should duly installed by Chemist.
3. About 12% doctors recommended that government or regulators should takes steps to ensure the data security. There would be big data in terms of patient profile hence the security of the data must be ensured from a cyber-threat.
4. About 12% doctors recommended to offer the m-health applications to the people at free of cost.
5. About 14% doctors recommended to draft a policy around the m-health implementation in the country
6. About 12% doctors recommended to set up the infrastructure around the country to make his a viable a productive solution for the people of the country.
7. About 9% doctors believes that the dep pockets of the country do not have the internet connectivity hence it is recommended to take the data connectivity through a reliable, cost effective and affordable resource.

Conclusion

M-health is a prominent requirement of India to achieve better health for all. The current studies indicate a large gap in need and implementation challenges regarding m Health. Also, according to our results, we must take into consideration long-term goals for the country to make India a Healthy Nation.

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