Impact of Mobile Applications on Health Care Information System

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ABSTRACT

This article explores the how the mobile devices is used for improving health care system. M-health— mobile applications for healthcare—is a young and dynamic field that could improve the well-being of people around the world. Mobile applications can lower costs and improve the quality of healthcare as well as shift behavior to strengthen prevention, all of which can improve health outcomes over the long term. Mobile technologies are increasingly growing in developing countries like India. There have been several new researches and developments in this space. Nowadays mobile is becoming an important ICT tool not only in urban regions but also in remote and rural areas. The rapid advancement in the technologies, ease of use and the falling costs of devices, make the mobile an appropriate and adaptable tool to bridge the digital divide. Mobile phone ownership in India is growing rapidly, six million new mobile subscriptions are added each month and every one will own a phone by the end of 2014. By the end of 2015, three quarters of India's population will be covered by a mobile network. Many of these new "mobile citizens" live in poorer and more rural areas with scarce infrastructure and facilities, high illiteracy levels, low PC and internet penetration. The availability of low-cost mobile phones and the already broad coverage of GSM networks in India is a huge opportunity to provide services that would trigger development and improve people's lives. The objective of this paper is to bring out status of mobile devices based Health care management systems in the world particularly in India.

KEYWORDS: M-Health, E-Health, GSM, GPRS, 3G,4G and Bluetooth

I INTRODUCTION

Mobile devices have reached more people in many developing countries than power grids, road systems, water works, or fiber optic networks. Mobile telephony has quickly reached communities that previously received little protection from public agencies and little interest from private markets. Mobile services offer a way for the public and private sectors to reach these communities, and one of the most important spheres for this interactive contact is health. This paper describes the current mobile health (m-health) landscape, identifies risks to its development, and highlights issues that will be of interest to donors and governments as the industry grows. M-health applications can help ensure social accountability. By using these applications, governments can establish feedback loops that individuals can use to provide feedback on government services, doctors, and care workers. In addition, m-health can help patients obtain the right information quickly and better understand their diagnoses and treatments. Doing so allows them to have more say in their treatment and to take more responsibility for complying with it— empowering patients with user-friendly health information. All these benefits can translate into

better health. Moreover, the dramatic impact that m-health can have on living standards has led development organizations to invest substantial hopes—and tens of millions of dollars—in m-health initiatives. Interventions and business models are springing up in a storm of innovation that stretches into even the most resource-deprived countries. Indeed, countries with the deepest needs often consider m-health tools essential for getting the most from their limited means.

II MOBILE HEALTH

Early in its development, in 2003, m-health was defined as wireless telemedicine involving the use of mobile telecommunications and multimedia technologies and their integration with mobile healthcare delivery systems. Since then it has come to encompass any use of mobile technology to address healthcare challenges such as access, quality, affordability, matching of resources, and behavioral norms. Thus it can involve a wide variety of people and products, as well as the actions that connect them. The crux of these connections is the exchange of information. Mobile technologies cannot physically carry drugs, doctors, and equipment between locations, but they can carry and process information in many forms: coded data, text, images, audio, and video. The main technologies carrying m-health information are GSM, GPRS, 3G, and 4G mobile telephone networks; Wifi and WiMAX computer-based technologies; and Bluetooth for short-range communications.

III MHEALTH DEFINTION

MHealth is a component of eHealth. To date, no standardized definition of mHealth has been established. For the purpose of this article, the Global Observatory for eHealth (GOe) defined mHealth or mobile health as medical and public health practice supported by mobile devices, such as mobile phones, patient
monitoring devices, personal digital assistants (PDAs), and other wireless devices.
mHealth involves the use and capitalization on a mobile phone's core utility of voice and short messaging service (SMS) as well as more complex functionalities and applications including general packet radio service (GPRS), third and fourth generation mobile telecommunications (3G

and 4G systems), global positioning system (GPS), and Bluetooth technology.

IV HEALTH CARE USING MOBILE DEVICES

Amongst the many ICT options available to government to improve the efficiency& effectiveness of its delivery process of primary health care, mobile & wireless technologies offer some exciting opportunities for a low cost, high reach service. There is strong evidence that mobile technologies could be instrumental in addressing slow response rates of government to citizen requests, poor access to services, particularly for low-income and marginalised populations in underserved rural areas. In addition, mobile technologies offer significant opportunities for improving the back-office operations of govt. In addition, many primary healthcare clinics located in the rural areas do not have any electronic systems at all & continue to operate paper- based systems, resulting in patient records being kept by patients themselves. The impact of the use of multiple systems is that it is difficult& costly to develop a national overview of patient statistics. One of the clearest examples of this is to be found in the sharing of patient laboratory results. Currently in most instances, this only takes place through manual exchange. Many vendors of Cellular phones started to embed a variety of ehealth services in Mobiles. Fig.1.1, Fig1.2, Fig1.3 and Fig 1.4 represents the mobile devices can be connected with the health care.

Fig1.1 Mobile Devices

Fig1.2 Mobile Devices with Networks

Fig1.3 Mobile with Laptop

Fig1.4 Mobile with Stethoscope

V PRIMARY HEALTH CARE IN INDIA

Primary Health Care as the range of services individuals and communities receive on a regular, ongoing basis in order to stay healthy, get better, manage ongoing illness or disease, and cope with end of life. In India, Primary Health Centers (PHCs) are the cornerstone of rural healthcare; a first port of call for the sick and an effective referral system; in addition to being the main focus of social and economic development of the community. It forms the first level of contact and a link between individuals and the national health system; bringing healthcare delivery as close as possible to where people live and work. Primary healthcare services substantially affects the general health of a population, however many factors undermine the quality and efficiency of primary healthcare services in developing countries. The World Health Organisation (WHO) specifically points out that to some extent, the deterioration in health status in developing countries is attributed to inadequacies in PHC implementation, neglecting the wider factors that have been responsible for this deterioration such as lack of commitment, inadequate allocation of financial resources to PHCs and community participation.

In India, although there are many reasons for poor PHC performance, accessibility is one of the major obstacles. The public health system is managed and overseen by District Health Officers. Although there are qualified doctors, PHCs have barely able to utilize due to non-usage of IT and Mobile access. The rural primary public health Infrastructure has recorded an impressive development during the last 60 years of independence. The network consists of 1,55,000 sub-centres, 33,109 primary health centres and 4222 community health centres, catering to a population of 15000, 30,000 and 1,00,000 respectively. Each PHC is targeted to cover a population of approximately 25,000 and is charged with providing promotive, preventive, curative and rehabilitative care. This implies offering a wide range of services such as health education, promotion of nutrition, basic sanitation, the provision of mother and child family welfare services, immunisation, disease control and appropriate treatment for illness and injury. The PHCs are hubs for 5-6 sub-centres that cover 3-4 villages and are operated by an Auxiliary Nurse Midwife (ANM). These facilities are a part of the three tier healthcare system; the PHCs act as referral centers for the Community Health Centres (CHCs), 30-bed hospitals and higher order public hospitals at the taluka and district levels.

VI IMPROVED HEALTH CARE USING MOBILE NETWORKS

Mobile networks now reach 90% of the world's population. Combined with powerful transformative technology megatrends like smart mobility, social networking, cloud computing and big data analytics, these networks lay the groundwork for patients to get health care not only in expensive hospitals and inconvenient clinics but in the communities and contexts in which they live. It is becoming a core attribute of patients, practitioners, providers and payers, equipping them to work together more effectively toward greater access to health care, lower cost and better outcomes. One of the first big waves of patient empowerment is coming at the intersection

of mobile and social networking. On their own, consumers already participate in billions of health-related discussions online, more and more often using smart mobile devices. On PatientsLikeMe.com, just one of many health-related social networks, nearly 150,000 registered users share condition, treatment and symptom information on over 1,000 health issues. But despite all the numerous reports of emerging mHealth use, it's important to keep in mind that we are still very early in the adoption curve. A recent report shows that only 23% of consumers have used mobile health solutions today — and that includes mobile phone calls to doctors' offices. This falls far short of general mobile usage patterns. For example, 64% of consumers have sent a text message, 38% have used their phone to access the internet and 27% use apps.

VII MOBILE HEALTH DEVELOPMENT INITIATIVES

Health systems usually do not provide the impetus for the development of m-health interventions. Instead, their development is usually driven by people adept with technology, members of nongovernmental organizations (NGOs), and private enterprises. Similarly, aid organizations are bearing the cost of experimentation in this area, and relying on them may slow innovation. Moreover, the lack of coordination between them may be fueling a wasteful proliferation of pilot projects but little financing for achieving scale. Indeed, many services are not built for scale but rather for small pilots intended to demonstrate proof of concept. Few m-health interventions have shown the capacity to serve millions of people because of fragmentation in financing, partnerships, and health systems. In addition, evidence on m-health is extremely limited, particularly for moving beyond intermediate outcomes to better health. Planning and funding for monitoring and evaluation (M&E) have been insufficient to provide the evidence required to inform policymaking and large-scale investment.

VIII MHEALTH SYSTEM

The m-health system overlaps several dynamic spheres: health, technology, and finance. Encompassing all these spheres is the influence of government, whose power to set regulations, policies, and strategies can affect all of them

throughout the development and use of m-health interventions. The many stakeholders in m-health influence the many drivers through which m-health improves health (Fig. 2).
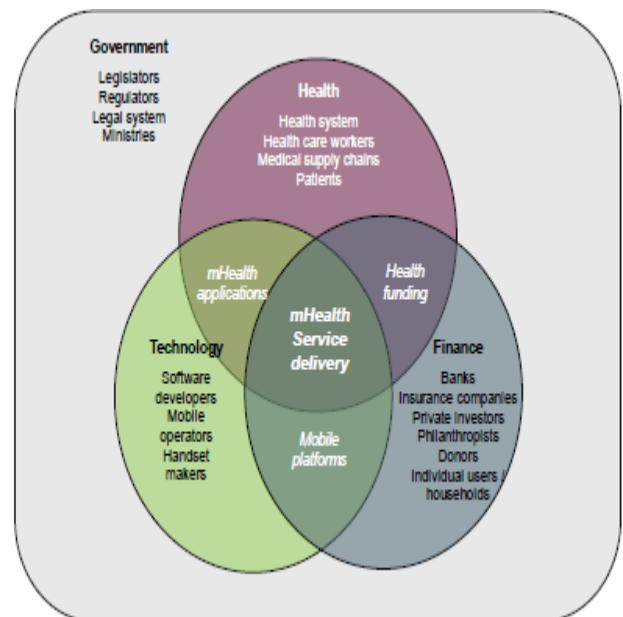

Fig.2 Combination of Health Sector with mobile applications

IX GOALS AND OBJECTIVES OF MHEALTH

One of the main goals of using mobile technology in the health sector is to improve the quality of and access to care. Because so many different factors can contribute to these aspects of healthcare, a wide variety of m-health interventions have arisen to address them. For example, m-health applications can help patients manage their treatments when attention from health workers is costly, unavailable, or difficult to obtain regularly. Patient tracking using m-health applications can also support the coordination and quality of care, especially in rural and underserved communities including the urban poor, women, the elderly, and the disabled. M-health applications can also be used for supply chain management, reducing delays in medicine shipments and providing point-of-use technologies for consumers to verify the authenticity of products they buy. The Stop Stock-Outs campaign encouraged consumers and pharmacists in six Sub-Saharan countries to report shortages of medicines and other products using SMS, resulting in hundreds of reports in a six-month period. And a system developed by

mPedigree and Hewlett Packard assigns codes to consumer drugs that are scratched off by consumers and authenticated by SMS. Objectives of M-health is:

- Access to patient information quickly
- Access to medical information databases
- Better ability to monitor chronically ill patients
- Higher revenue potential (e.g., can see more patients per day) and lower administrative costs
- Enables physician-to-physician collaboration
- Provides rapid learning environment
- Enables patient-physician collaboration

X CONCLUSION

In this article we have seen that the advantages of mobile devices with health care industries. The advancement in technologies is used by health care sector. The Primary Health Care strategy seems to be a right intervention in terms of basic preventive methods but it needs to be supported by other strategies as well to close the gaps. Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology, which is universally accessible to individuals, family and the community through their full participation and at the cost they can afford. The Primary Health Care can be made transparent and easily accessible by the implementation of "Mobile based Primary Health Care Management System". With using these technologies, we have improved health care sector drastically and we saved thousands of lives.

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