

Mobile based Healthcare Application Model for Hyderabad, Pakistan

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Abstract

Objectives: Healthcare is one of the major issues around the world. Pakistan itself faces drastic healthcare issues due to its limited resources, lack of funds and staff. Technological services in Pakistan are on the rise especially the data service and penetration of mobile phone is extremely high in urban and rural areas. **Methods/Statistical Analysis:** E-Health (electronic healthcare) services have changed the era of healthcare in the world; especially the government is trying to use mobile and e-health services to overcome the problems of cost and a shortage of staff. **Findings:** This research proposes a pilot Mobile Health Care (M-healthcare) model for the city of Hyderabad in Pakistan. The area of focus includes health communities, health clinics, and hospital or clinic unions. **Application/Improvements:** The proposed model shows the specific doctor for a specific disease and his/her clinic or OPD address. In the proposed m-healthcare model will deliver the healthcare services to patients from remote areas. The m-healthcare model provides patients with information about the medical specialists for the disease or injury. M-healthcare application will save time and reduce travel cost of patients and ensures that patient will reach their destination easily and in-time.

Keywords: m-Health, Healthcare, Electronic Health, Patient Services, Healthcare Analytics

1. Introduction

Healthcare is an important aspect of human lives and a necessity to be provided to all members. With the advancement of technology, mobile applications are omnipresent. Mobile applications presence has increased in many folds and is common in smart phones, tablets, and PDA's. From 2010 to 2017 the global market of telemedicine is expected to grow up to 30 billion dollars¹. M-healthcare will improve the patient monitoring in remote areas. With the arrival of smart phones and support of 3G and 4G mobile networks in Pakistan, it is now possible to provide m-healthcare or mobile healthcare solutions. The

purpose of M-healthcare is to deliver the healthcare at anyplace and anytime surpassing organizational and geographical barriers^{1,2}. The m-health care system will have a strong impact on the healthcare area for example saving of the time and providing information, news alerts, updates and many more services. The typical architecture of M-healthcare is shown in the Figure 1 uses set of web services to provide interaction between patients and doctors. At the same time, the doctor or patient can access the medical record on their smart devices that can phone, computer or tablet. In this way the patients can easily contact the physician or appointment.

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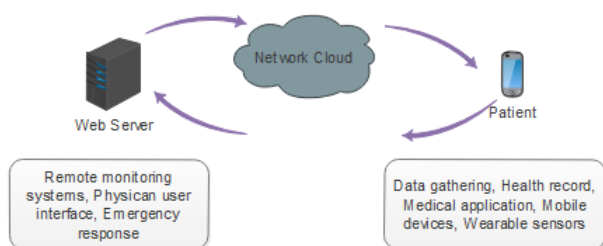


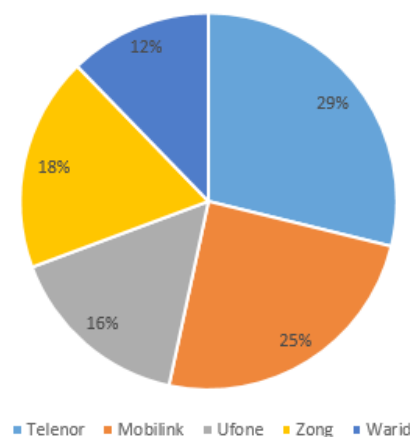
Figure 1. Typical architecture of m-healthcare.

2. Mobile Health Applications and Facilities

Mobile applications for healthcare systems are exponentially increasing and changing. Medical applications and m-healthcare services are smoothly penetrating developing countries³. Especially where the healthcare services are regularly remote and unreachable. Research in healthcare has gathered some important findings areas such as chronic diseases, diabetes, obesity and cardiology⁴. Patients are one of the utmost significant drivers of mobile healthcare.

Medical will make use of m-Health fundamentally for monitoring, prevention, and finding of diseases, and further, the cutting-edge facilities present basic analysis. The patient will be able to get the access to services using

Mobile services in pakistan



internet. In Pakistan, there are many mobile internet service providers like Telenor, Mobilink, Ufone, Zong and Warid as shown in Figure 2, and user of smart phones in Pakistan is shown in Figure 3.

3. Patient's Problem

People in Hyderabad are facing problems, such as malnutrition, depression and anxiety. These issues lead to the lack of wellbeing. The rates of the diseases in Pakistan are increasing day by day. Government is taking action

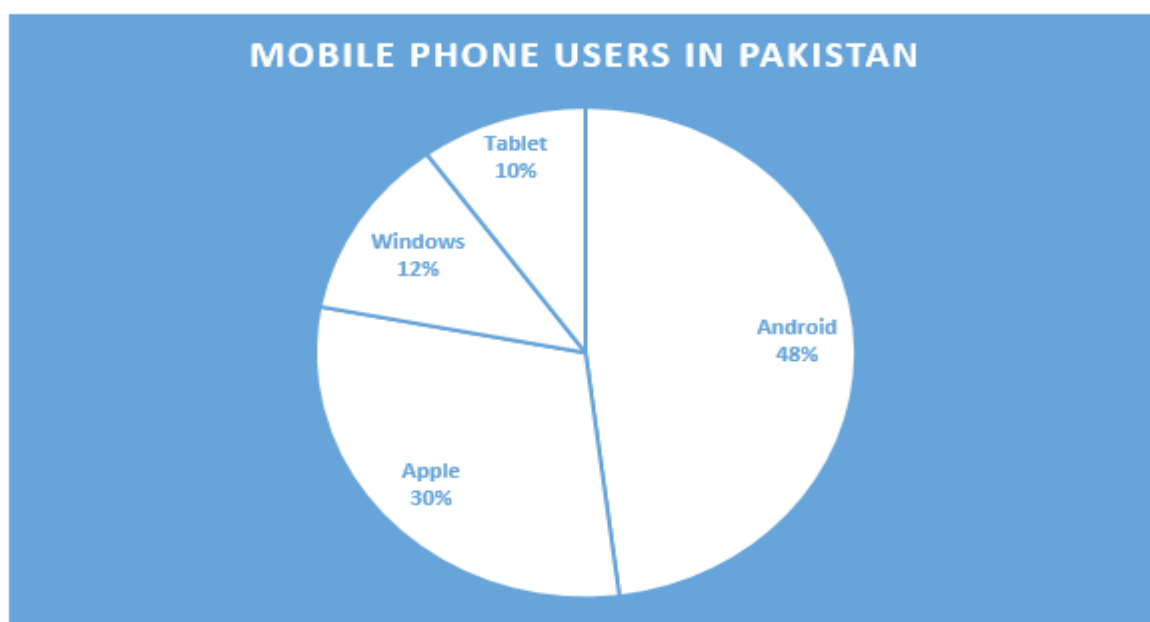


Figure 3. Different Data Service Provider in Pakistan.

to upgrade healthcare facilities needs to take some serious action in healthcare facilities and build new hospitals, well equipped clinics. But this requires a lot of funds and investment that is quite hard for the government. Internet connectivity is omnipresent and it plays a vital role in our lives. By this proposed m-health care model the patient will find the relevant doctors near there are, time to checkup and exact location for checkup⁵. This will make lives easier for people coming from remote areas who do not know about the concerned. Physician or the exact address of the physician. Figure 4 Shows, how people and patient are crowded outside of the clinic and waiting for their turn.

4. Proposed Framework for M-Healthcare Model

The proposed framework of the m-healthcare is shown in figure 5. First, the proposed service is downloaded or accessed through smart phone having internet connection. M-healthcare app will provide a list of healthcare providers displayed on the screen as shown in the Figure 5. If the patient wants to go specific specialist, then he/

she will click the skin option button, after the pressing the skin option button, the skin option shows the doctors lists and his clinic or hospital⁶.

In this framework, m-healthcare model will show the specific doctor and benefit the patient by saving their time and reduce the cost of the patient, ensuring they reach the destination easily. Mobile technology, joint with data analytics, can increase options for patients by bringing improved decision support to medical specialists. Mobile healthcare also enables the enhanced relationship between doctors and patients that is another important aspect of the m-healthcare model, secondly it will reduce the costs and thirdly it will provide the direct service. M-healthcare model will intimate doctors with their upcoming appointments so that they can be available for checkup. In case of some problems with current appointment the new scheduling and information will be handled automatically by m-healthcare model. With proposed m-healthcare model the system can then after Hyderabad case as pilot study will be extended the model to whole country. In future, analytics will be embedded into m-healthcare model to have the rating system for doctor and directing patient automatically to relevant doctor based on their disease⁷.



Figure 4. Patients are Crowded Outside of the Clinic.

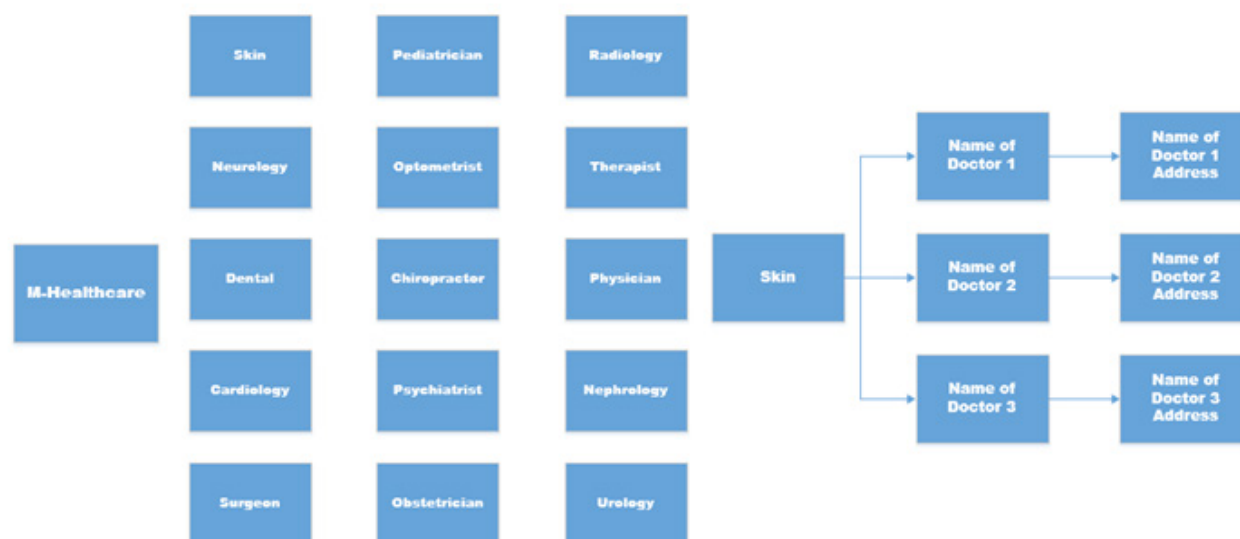


Figure 5. Proposed Framework of M-Healthcare Model.

5. Conclusion

The purpose of m-healthcare model is to deliver the healthcare at anyplace and anytime, surpassing organizational, time-based and geographical barriers. M-healthcare model will provide facilities and applications play a vital part in the reformation of the old healthcare facilities and systems that are still grounded on the physical relationship between the doctor and the patient. The m-healthcare model will provide a cost effective solution to patients using the internet services. It will allow patients to guide them to nearby medical specialists, making their booking and then guiding them to their location. The model will inform doctor with upcoming appointment. Furthermore, the M-healthcare system will have a strong and great impact on the healthcare area for example saving of the time, information, news alerts, updates and much more. Hence, the most important enhancement of patient lives, exclusively in disabled, chronically ill and elderly. With proposed m-healthcare model the system can then after Hyderabad case as pilot study will be extended the model to whole country. In future, analytics will be embedded into m-healthcare model to have the rating system for doctor and directing patient automatically to relevant doctor based on their disease.

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