

Chapter 26

Mobile Health (M–Health) for Tele–Wound Monitoring: Role of M–Health in Wound Management

Chinmay Chakraborty
Birla Institute of Technology, India

ABSTRACT

This chapter describes the implementation of tele-wound monitoring (TWM) for a patient's chronic wound using a smartphone. The system proved to be quick and reliable for providing healthcare at the doorstep. The smartphone-enabled a tele-wound monitoring (TWM) framework, which is used for remote wound monitoring, has been highlighted. The TWM is effective for both rural as well as urban people; it provides good performance in terms of wound monitoring and diagnosis. The objective of this chapter is to design and develop a TWM system model that can acquire, process and monitor chronic wound-related problems by using a low-cost smartphone to increase the overall performance of the system. Specifically, the TWM system is developed for biomedical information like chronic wound processing to monitor important patient information inexpensively and accurately. The implementation is carried out using hypertext preprocessor (PHP) and MySql database and especially by Firebase cloud database, which is used for improving the efficiency.

INTRODUCTION

The Information and Communication Technology (ICT) plays a vital role in the healthcare domain to improve the overall performance of the system. Efficient communication is needed for adjusting care and preventing serious issues as interventions can be done faster. The ICT is used for storing and retrieval of the information and provides the patients with better services at a reduced cost. The advantages of ICTs are as follows: (a) faster accessibility to clinicians and other medical resources, (b) technology helps to improve the hospital administration for better care, (c) quick critical patient monitoring, and (d) all medical related information is available via the social media. Currently ICT faces a lot of challenges due to the following reasons: lack of medical data standards, (b) poor infrastructure, (e) environmental chal-

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lenges, (f) Poor government policy, (g) lack of consistent power supply, (g) poor internet connectivity, and (h) lack of skilled people to operate the system, (i) lack of awareness respectively in today's health care system. Bashshur et al. (2011) explained the importance of ICT for health domains consisting of (a) telemedicine, (b) telehealth, (c) e-Health and (d) m-Health.

Telemedicine

The smartphone has been recognized as a possible tool for a telemedicine system. (Chinmay et al., 2016). The smartphone used in telemedicine with an inbuilt high-resolution camera to capture digital images and computing and networking features which allow direct interaction. The acquired wound data using a smartphone app process is the central hub for better treatment. Appropriate returning messages will be routed to local providers through physical delivery to ensure information integrity. Telemedicine systems are becoming more demanding by providing advanced features of the smartphone and better computing services. Telemedicine systems also maintain stored patient's data in the database. Telemedicine (Wood et al., 2008) is an emerging field in advanced communication systems and medical informatics, able to deliver the healthcare data and to share medical expertise using wireless technologies in the span of tele-oncology, telepathology, teleradiology, emergency healthcare and teledermatology. The high featured smartphones (Xolo, Apple, Nokia, Samsung Galaxy Tab, Windows Phone, Blackberry, iOS, Jio, Canon, Adobe, Android) can be used for sensing, acquiring a variety of medical data collection and monitoring applications.

Telehealth

Telehealth acts as a bridge between a patient and a healthcare provider via an electronic medium to monitor medical services at distant sites. Telehealth systems examine patients who are in a critical condition with medical facilities anytime. It provides the patient's vital signs monitoring on a regular basis reducing time and cost. This system created its network-based telehealth wound management system to address the systematic issue in the provision of wound care. It improves the access to healthcare technology and reduces costs. Telehealth can be applied to chronic wounds monitoring over a long distance because it can transfer audio and visual patient information from remote to expert clinics with specialized wound knowledge and technical skill.

E-Health

The electronic health (e-Health) services are driven by computers and other medical devices in the global market. Smartphone usability has increased drastically in recent years. e-Health improves the access efficiency, quality of care, effectiveness, and connected medical organizations, practitioners, patients, medical personnel in an effort to enhance the patient health status.

M-Health

Mobile health (m-Health) technology is the most demanding and developing factor in healthcare today providing better and more efficient care. The m-Health is a part of e-Health used in the delivery of healthcare services or medical information with a smartphone. m-Health technology plays an important

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