Health Care Monitoring System Using Android Phone

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ABSTRACT

As Hypertension is a significant modifiable risk factor for cardiovascular and kidney disease and blood pressure (BP) control is a very important step for cardiovascular risk management. Recently, home telemonitoring BP has been suggested as an effective tool for BP control and been commonly used in Western countries. Application of technology for health care management becomes a trend. Health data is usually longitudinal and voluminous; an effective data management would improve the quality of health care service. In order to deal with the volume, variety and velocity of medical data, cloud technology has opened a new horizon, especially data for medical research. Proposed system monitor and controls various disease (such as Blood Pressure (BP), Diabetes, AIDS,..etc.) and provide appropriate decision to patient through SMS and mail. System computes the each disease symptoms.

Keyword: **-** – *Cloud Platform, Hypertension, Blood Pressure, Big Data Processing.*

1. INTRODUCTION

The modern visionary of health care industry is to provide better health care to people anytime and anywhere in the world in a more economic and patient friendly manner. Therefore for increasing the patient care efficiency, there arises a need to improve the patient monitoring devices and make them more mobile. The medical world today faces two basic problems when it comes to patient monitoring. Firstly, the needs of health care's provider's presence near the bedside of the patient and secondly, the patient is restricted to bed and wired to large machines. In order to achieve better quality patient care, the above cited problems have to be solved. As the bio instrumentation, computers and telecommunications technologies are advancing, it has become feasible to design more portal vital sign tele monitoring systems to acquire, record, display and to transmit the physiological signal from the human body to any location. Recent works in communication technologies have inspired the development of telemedicine to a large extent. Telemedicine benefits not only the customers who are able to receive health care more efficiently; it also benefits the doctors who can streamline their efforts to assist more patients.

Hypertension is a critical risk factor for cardiovascular morbidity and mortality in the general population and reduction of blood pressure (BP) with effective antihypertensive therapy significantly decreases cardiovascular morbidity and mortality. Keeping observing BP is also a matter of concern for those who have hypertension, coronary heart disease, or other cardiovascular diseases. BP measurement is also important for particular disease patients, such as haemodialysis patients. Hence, in the daily life, BP measurement and management is very useful for handling health situation and plays a preventive function. Many researches point out that the importance of BP measurement and management for elder and hypertensions. Elderly people usually have higher BP, prone to take sick, and the morbidity of BP disease is higher.

Health care is the use of information technology to provide health care services at a distance. It includes anything from medical services at the inpatient or at the outpatient stage. It could even include when a doctor in one hospital supports surgery with a doctor in another hospital somewhere on another continent. What the doctors actually would like to see is constant monitoring of those parameters so they always know what the history is and how big the change from yesterday to today be and when you have these findings and have these data points available, then a much earlier intervention can take place for a patient. Telemedicine can be extremely beneficial for people living in isolated communities and remote regions and is currently being applied in virtually all medical do mains. Patients who live in such areas can be seen by a doctor or specialist, who can provide an accurate and complete examination, while the patient may not have to travel or wait the normal distances or times like those from conventional hospital or general practitioner visits. Recent developments in mobile collaboration technology with the use of hand-held mobile devices allow health care professionals in multiple locations the ability to view, discuss and access patient issues as if they were in the same room.

.1.1 Related work

This chapter explains the study done on the etc method in the existing system by different authors.

(a) Wun-Jin Li, Yuan-Long Luo, "A Wireless Blood Pressure Monitoring System for Personal Health Management", in september 2010

Technique Used: GPS location, Android SDK

Description: In this paper, we developed a wireless blood pressure monitoring system which provides a useful tool for users to measure and manage their daily blood pressure values

Disadvantage: This system monitor only single disease i.e. Blood pressure (BP).

(b) C. S. Wang, T. W. Wang, "Mobile and Wireless Technologies on Sphygmomanometer and Pulsometer for Patients Setting Pacemaker and Complicating with Other Cardiovascular Disease", in 2008

Technique Used: Electric Device Pacemakers

Description: Pacemakers can be affected by electromagnetic interference in several different ways, including temporary inhibition of the pacemaker, temporary function at the fixed noise rate, temporary function at the fixed magnet rate, permanent inhibition or malfunction and random reprogramming.

Disadvantage: Having only basic functions.

(c) A. E. Lazar, M. C. Smith, "Blood Pressure Measurement in Hemodialysis Patients", in 2004

Technique Used: Hypertension Computation

Description: Hypertension is common in patients with advanced stages of chronic kidney disease (CKD) and its prevalence remain very high in patients with end stage renal disease (ESRD) treated with hemodialysis. Using various definitions of hypertension, the prevalence of hypertension in hemodialysis patients is up to 90/hemodialysis patients is often complicated especially because there are large swings in blood pressure with dialysis and it is difficult to accurately ascertain the blood pressure in the interdialytic period.

Disadvantage: This system monitors only Hypertension.

(d) G. Bobrie, G. Chatellier, "Cardiovascular Prognosis of "Masked Hypertension" Detected by Blood Pressure Self-measurement in Elderly Treated Hypertension Patients", in 2004.

Technique Used: Office and Home Hypertension computing

Description: blood pressure (BP) measurement during clinical consultations is the auscultate method with a mercury manometer. This method has been used to demonstrate the relationship between BP and cardiovascular risk.

Disadvantage: assess the prognostic value of home vs office BP measurement by general practitioners in a European population of elderly patients being treated for hypertension.

(e) J. H. Shin, G. S. Chung, "Ubiquitous House and Unconstrained Monitoring Devices for Home Healthcare System", 2007.

Technique Used: Android and ubiquitous technique

Description: a system prototype that recommends diagnostic services based on physiological data collected in real time from a distant patient. The prototype uses WBAN body sensors to be worn by the individual and an android smart phone as a personal server.
Disadvantage: This system s based on physiological data collected in real time from a distant patient.

1.2 MATHEMATICAL MODEL

Mathematical model:

System Description:

Input: diseases symptoms

Output: Notify patients with precautions and treatments.

Set P Patient Module

P = {p0, p1, p2}

    p0 = Register to system.

    p1 = Login to system

    p2 = Provide Symptoms of Disease.

    p3 = Take precaution prescribed by doctor.

Set D Doctor Module

D = {p2, d0, d1, d2}

    d0= Login to system

    d1= Check patient symptoms

    d0 = Reply patient

    d2 = Decides precaution and send to patient.

Set S System Module

S = {p2,s0, s1, s2 }

    s0 = Check patient values provided by him.

    s1 = Analysis data

    s2 = send details to doctors

    s3= Provide first aid.
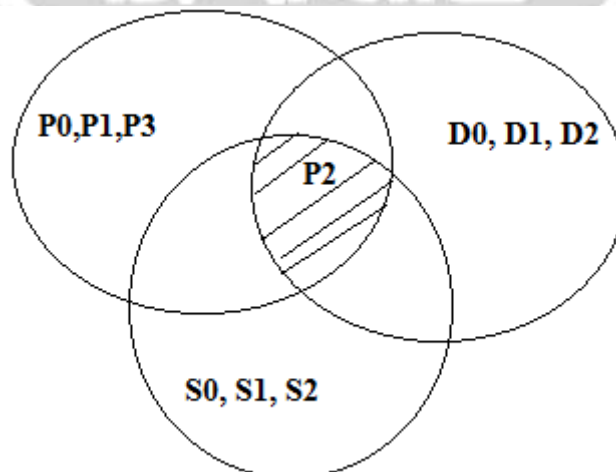
Intersection of SET P, D and S

Figure 1: Intersection of SET P D and S

1.3 SYSTEM ARCHITECTURE

The modern health care industry is to provide better health care to people anytime and anywhere in the world in a more economic and patient friendly manner. Therefore for increasing the patient care efficiency, there arises a need to improve the patient monitoring devices and make them more mobile. The medical world today faces two basic problems when it comes to patient monitoring. Firstly, the needs of health care's provider's presence near the bedside of the patient and secondly, the patient is restricted to bed and wired to large machines. In order to achieve better quality patient care, the above cited problems have to be solved. As the bio instrumentation, computers and telecommunications technologies are advancing, it has become feasible to design more portal vital sign tele monitoring systems to acquire, record, display and to transmit the physiological signal from the human body to any location. Recent works in communication technologies have inspired the development of telemedicine to a large extent. Telemedicine benefits not only the customers who are able to receive health care more efficiently; it also benefits the doctors who can streamline their efforts to assist more patients.
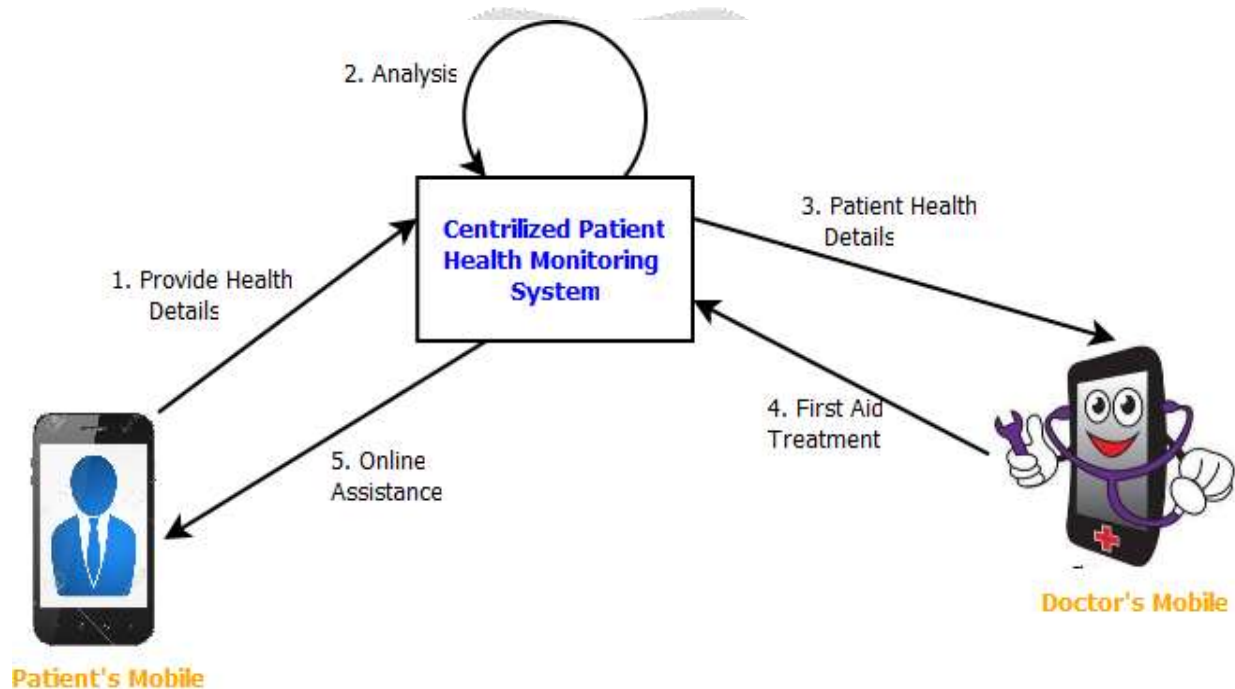

Figure2: System architecture

In our system Detects and identify the patients symptoms by using threshold. System identify the doctor according to patients symptoms details and it send towards the related doctor. Doctor sends the first ads treatment to patients via SMS and e-mail.

Modules:
Proposed system mainly consist of three modules,
1. Patient Module
2. System Module
3. Doctor Module.

1. Patient Module
This module accepts symptoms from the patient. Symptoms can be various disease such as Hurt attack, BP, Aids,...etc. Patients fills the forms and send it towards the system.

2. System Module
In this system module, the symptoms sent by the patients is receive by the system. The threshold value of each disease is fix already in the system. Threshold value is calculated by using this patient details. According to details the disease is identified and Send this details to particular specialist doctor.

3. Doctor Module

In this process, the patient details is receives by the doctor, sent by the system. According to that details system doctor sends first ad treatment to the patients. Doctor send details this detail notifications via SMS and Email. If in case of any emergency doctor fixed meeting in case of any emergency.

1.4 CONCLUSION AND FUTURE WORK

In this Project, we propose a Online health care monitoring system. This system monitors various disease such as Hurt attack, BP, Aids, .etc. System Detects and identify the patients symptoms by using threshold. System identify the doctor according to patients symptoms details and it send towards the related doctor. Doctor sends notification to the patients for first ads treatment via SMS and e-mail any fix meeting in case of any emergency.

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