HEART ATTACK MONITORING SYSTEM IN MONITORINGSYSTEM

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Abstract: It is difficult to monitor every patient by a doctor/hospital management during this pandemic time. And also, it is not possible to observe the health condition of quarantine people (who are suffering due to COVID-19). Traditionally the detection systems were only found in hospitals and were characterized by huge and complex circuitry which required high power consumption. In order to avoid the direct contact with patient we are implementing a system to monitor patient health remotely.
The system consists of various sensors for measuring different parameters like Temperature, Oxygen level, Heart Beat (BPM), Body Movement, Humidity, Air Quality. The data collected from these sensors will be transferred via an Arduino GSM module to the Personal Doctor, Hospital Management, Family respectively through an SMS alert. The SMS should contain a link, by clicking on the link the data should be displayed on web page in a particular manner. If the range of the parameters exceed or succeed it should give an emergency alert.

Keywords: Arduino,GSM module,BPM,Air Quality sensor,Humidity,Body movement ,SMS alert,family members.

INTRODUCTION: For the past 2years we are undergoing through very serious situation. That is COVID-19. In this pandemic situation we lost many lives. Due to many reasons like medical scarcity, less number of doctors (at the right time), sudden attack of virus, people awareness and so on. Due to covid we lost nearly 5 lakhs peoples in India and in worldwide we lost 55 lakhs people. Which is huge loss for mankind.
Due to high population, it is difficult to monitor the patient, with less staff and hospitals in India. India has a total of 43,486 private hospitals, 1.18 million beds, 59,264 ICUs, and 29,631 ventilators. On the other hand, there are 25,778 public hospitals, 713,986 beds, 35,700 ICUs, and 17,850 ventilators. Total private infrastructure accounts for nearly 62% of all of India's health infrastructure. Total population in India is 1,400,000,000.
To control the health conditions of peoples at critical situation, we go with new technologies which helpful to save the lives. Specifically, in this pandemic situation usage of technology is the one of the best options.
In covid the mankind is divided into 3 categories that is firstly non effected people (from covid), secondly effected but they stay in quarantine and lastly effected from covid and they are in critical condition. For non-effected people no need of doctor consultation, but quarantine people need monitoring of the patient. For critical condition it is necessary of doctor. So, we mainly focus on the monitoring of the patient.
There is some risk to contact with patients in this situation. Spreading of virus is high due to direct contact, to avoid this we can monitor a patient remotely by using some new technology, which available in the market. In previous years and present we are using high circuitry and huge equipment's to monitor the patient. After we got some new technologies to monitor the patient like by using Raspberry pi, in which parameters of the patient can be by observe by using LCD near the patient, without any professional doctor and nurses (hospital staff). But for present we need equipment's like which can monitor the patient remotely with less circuitry.

EXISTING SYSTEM

In the existing system the sensors will sense the parameters of the patient and transfer it to Raspberry Pi. It will further transfer the data to the LCD display which is connected to it in the circuit. Only the person nearby the patient or health monitoring equipment can observe and know the status. The

ISSN: 2278-4632
Vol-12 Issue-12 No.02, December 2022

patient should be monitored 24/7 in view the health condition. So, there should be a nurse or an hospital management or family member to monitor. Thus, this will consume more man power too.

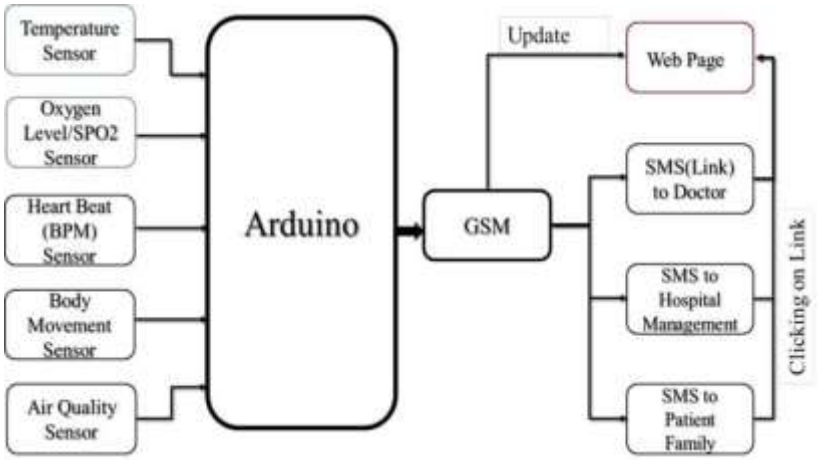
If the parameters increase or decrease in range it will not give any alert, in contrast it will just display the values on LCD. The guardian or hospital staff have to use telephone lines to transmit the data manually to doctors. As the parameters of these system are continuously collected and shown on display Raspberry Pi will take more power and increase the cost of the system. The monitoring system consists of high-power consumption equipment, with traditional monitoring ofpatient.

COMPARSION BETWEEN EXISTING AND PROPOSED SYSTEM

EXISTING SYSTEM	PROPOSED SYSTEM
High power consumption, because of using Raspberry pi	Low power consumption, by using Arduino.
The Raspberry Pi 4 consumed idle 3.8 W to 4.0 W	Arduino Uno board draws about 42 mA, 7volts& 0.29 Watts.
Manpower is required to monitor the patient, because it shows the parameters in the LCD.	There is no need of manpower. All data will be transferred through internet.
Continuous data collection.	No need of Continues data required, only abnormal & critical data.
High cost compared to proposed model.	Less cost compared to existing system.
There is no Confidential to the patient data.	Confidential should will be there to the patient data.

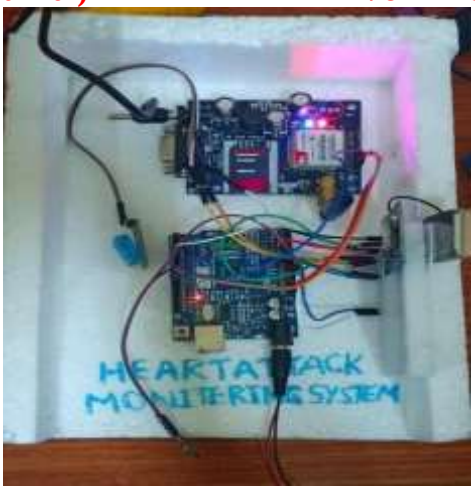
Materials and Methods: We need to monitor the five different parameters to know the condition of the patient. Parameters like Temperature, Oxygen Level, Blood Pressure, Body Movement and Air Quality. These parameters will be sensed by the electronic sensors, the sensed data will be sent to the Arduino. In Arduino analogue data will be converted into digital data, that will be transferred to the GSM module. GSM will update the Web Page as well as it will send the SMS to doctor, hospital management and patient family.

Above five sensors/devices will sense the patient parameters and its data will be sent to the Arduino. In this we are using Arduino UNO, it will take the data from the sensors and it will be converted into the digital data. Converted digital data will be divided into three categories, i.e., like normal condition, abnormal condition and critical condition. These categories will be divided in the code, what we dump into the Arduino. Arduino will only send the data to the GSM, which is abnormal and critical condition data. Because to reduce the network traffic and to decrease the storage capacity. And also, normal condition data is unnecessary to the doctors.



The data from Arduino to GSM will be transferred, the data in digital form. GSM-900 is used to transfer or update the data to the website and also it will send the SMS to the doctor, hospital management and family members at critical condition and abnormal condition data.

ISSN: 2278-4632
Vol-12 Issue-12 No.02, December 2022



SMS consists of patient name, patient id (Unique) and details. It will show the patient parameter values in terms of numerical values and in graphical type. And also, GSM will send SMS to the doctor, hospital management and family to alert with a link. Link directly gives the patient current parameter values.

By depending patient condition (parameter values), doctor will take the action. Action may be through nurse or through management or directly by the doctor.

RESULTS AND DISCUSSIONS

Optimized Remote Health Monitoring system is most useful in this pandemic situation. It can save many lives by monitoring the patient condition & alerting the doctors by SMS, if there any abnormal and critical condition to the patient.

S.NO	NAME OF THE PATIENT	BPM	TEMPERATURE	PATIENT TEMPERATURE
01	Priya	77	26.00C	78.80
02	Nanditha	76	26.00C	78.80
03	Sindhu	78	26.00C	78.80
04	Yashwanth	79	26.00C	78.80
05	Sushanth	77	26.00C	78.80

If the network is not available in that particular area the system stops working [1]. If the heart beat sensor or BPM is not connected properly the system will not give proper result [2]. Low power consumption, by using Arduino There is no need of manpower [3]. All data will be transferred through internet [4]. No need of Continues data required, only abnormal & critical data. Less cost compared to existing system [5]. Confidential should be there to the patient data[6]

ISSN: 2278-4632
Vol-12 Issue-12 No.02, December 2022

Patient got heartattack.
Patient BPM :77
Patient Room Temperature :
26.00*C / 78.80*P
Location of the Patient:
https://maps.app.goo.gl
/QpsYhBLnGZruJDhp8

CONCLUSION:

Optimized Remote Health Monitoring system is most useful in this pandemic situation. It can save many lives by monitoring the patient condition & alerting the doctors by SMS, if there any abnormal and critical condition to the patient. We reduced the power consumption by using the Arduino and GSM module. The network traffic will be less by transferring only required/necessary data to the destination, destination like personalized doctor, Hospital management and patient family members. There will be a unique id to each patient to maintainthe patient data confidential.

Sensed parameter values will be transferred to the Arduino, Arduino will divide the data and transfer the required data to the GSM module. GSM module will go with two tasks. Firstly, it updates the web page and secondly it will give alert message to the destination. Message/SMS consist of a link, which gives the direct parameter values of the patient. By knowing the current data of the patient, based on that doctor will take the action.

FUTURE SCOPE:

In this we are only alert the doctor, hospital management and family members through the SMS, not with the call. We can add alerting the doctors through the phone call, it is easy to take the action if the patient condition is critical. And also, we can provide the clear information to the family members like fever, cold or any other particular medical issue based on the parameter ranges. For this we required continues power supply, there is chance of power cuts. To avoid this, we can use a battery, which runs the Arduino and GSM module.

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