Abstract – Largest ever study of deaths show that heart ailments and respiratory failure have replaced communicable diseases as the biggest killer in rural and urban areas of the country. Population based studies in the youth show that the precursors of heart disease start in adolescence. In order to stem the tide of these diseases, early detection and primary prevention is needed. Early detection and primary prevention starts with education and awareness that these diseases poses the greatest threat and measures to prevent or reverse this disease must be taken. Here comes the need for automatic disease detection technique that would aid the physicians in an early detection of human body abnormalities. Heart rate, respiration and body temperature of the subjects are collected and testing is done using samples from reference database. All these three parameters are monitored using different sensors and these measured values are transferred to the PC using ZigBee that provides wireless transfer of data. As a result the patient health status can be acquired, monitored and synthesized immediately in a clear and easy way. The simulations are done using LabView software.

Keywords—e-Health, patient specific health care, monitoring, atherosclerosis, wireless transfer, low cost approach.

I. INTRODUCTION

Due to certain myths and misconceptions, most of the people do not come out in the open to get themselves diagnosed and treated. In case of people who believe that all these diseases are fatal, contagious, genetic and that it can’t be treated, death becomes inevitable. Since the population mainly belongs to an intermediate risk group, conventional risk factors have low predictive power and here comes the necessity for the integrated e-health approach for early detection of human body disorders. Health care practice supported by electronic processes and communication, dating back to at least 1999 is termed e-health. In other words it is the health [1] care practices using the internet.

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Respiration monitoring is one of the most important elements of accessing the physiological state. Respiration failure can be difficult to predict. In just a few minutes life-threatening conditions can arise. So by monitoring the chest movement continuous measurement and free access to all vital organs can be done. This makes possible the measurement of not only the respiratory signal frequency but also the analysis of the patients' respiratory cycle. This non-invasive evaluation of respiration helps in early diagnosis and prevention of respiratory accidents with an advantage of providing reliable and accurate information about the extent of respiratory motion magnitude.

Any abnormalities in human body cause a variation to the normal body temperature. This is one of the most easily detectable changes that occur initially. As a result, body temperature is also measured using different sensors [6].

II. BLOCK DIAGRAM

![Block Diagram](image)

Wireless communication systems have been gaining popularity as it provides mobility and convenience. Development in this technology has given rise to numerous options of data transfer with coverage ranging from a few meters to thousand kilometers.

Zigbee can be defined as a low cost, low power, wireless mesh network standard. It is used in mesh network form to transmit data over longer distances. This data is passed through intermediate devices so that it can reach more distant ones. It is targeted at applications that require a long battery life, secure networking, and low data rate. Zigbee also provides short-range wireless transfer of data at relatively low rates. It is simpler and less expensive than WPANs such as Bluetooth.

Another advantage of using Zigbee is that it provides large network capacity and saves power. RS232 provides connection between a Data Terminal Equipment (DTE) and a Data Circuit Terminating Equipment (DCE). It is commonly used in computer serial ports. RS232 can also be used as a standard for serial binary single-ended data and control signals.

III. SIMULATION MODEL

A. Heart Beat

![Heart Beat Simulation Model](image)

B. Respiration

![Respiration Simulation Model](image)
Heart rate, respiration and body temperature of the subjects are monitored using different sensors [6] and these measured values are transferred to the PC using ZigBee that provides wireless [7] transfer of data. As a result the patient health status can be acquired, monitored and synthesized immediately in a clear and easy way. The simulation is done using LabView.

The normal values for heart rate, respiration and body temperature are earlier fed into the system. The measured values of the subject’s heart rate, respiration rate and body temperature acquired using different sensors are then tested using samples from the reference database. If the measured value of the subject differ from the normal value then there will be an indication showing that the parameter of the subject under analysis is abnormal. Healthy subjects show no difference between calculated and estimated risk values. Repeatable non-invasive technology is being used for this purpose. Thus detection by means of noninvasive techniques for the evaluation of structural and/or functional parameters provides a major opportunity in the early diagnosis and prevention of human body diseases and also improves patient specific diagnosis.

IV. RESULTS AND DISCUSSION

The signals for heart rate, respiration and body temperature are monitored for further evaluation. The signal conditioning, classification and user-interface of these recorded signals is implemented in software using Labview 8.6. The main advantage is that multiple parameters can be monitored at a time. The parameters including heart rate, respiration and body temperature can be acquired, monitored and immediately synthesized in a clear and easy way by considering a minimum amount of data. All these provide benefits of patient specific monitoring and treatment support tools for early detection of human body disorders. Moreover this can be made use at our own convenience using computer aided instruction [9-13]. The introduction to wireless connections to exchange sensor’s data also provides a great flexibility for both patient and medical staff. Moreover low cost and repeatable noninvasive technology is justified.

V. CONCLUSION

The main advantage of this paper is the benefit of patient specific monitoring and treatment support tools for early detection of human body disorders. Its recommendations should not be used as a basis for delaying, or else as a substitute for, evaluation and treatment by a physician. Leading a healthy lifestyle and also paying heed to the suggestions of experts is recommended. Higher awareness among people are required in order to avoid undue advantage of the patient’s desperation. They should be aware that health decisions should not be based on hope and desperation but should be rational and practical.

The work presented is aimed for the early detection and prevention of human body abnormalities in real-time.
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REFERENCES