

# A Review of Different Methodologies for Wireless Sensor Network based Patient Health Monitoring

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**Abstract:-** Wireless sensor networks (WSN) is presently getting Important attention due to their infinite potential. A wireless sensor network is a combination of many nodes which are formed into a common network. All node belongs from Working potentiality. In this Paper, we focus on design and the uses of Wireless Sensor Networks. We also show the future scope of WSN. The design network must possess self-organizing capacities while the Locations of individual nodes are not planned.

## I. INTRODUCTION

There is big involvement in wireless technologies for monitoring of the patient in different fields like hospitals and nursing homes. By wireless technology, it offers best treatments to patients though the Wireless Sensor Network while they are physically not attending in the hospital. These type of arrangements are more valuable for old citizen because they are not able to go hospitals and regular check up. Today lots of different type of products are formed which provide the wireless health monitoring arrangement. They allow actual live health status of the patient to doctor directly[5].The arrangement provides quick responsible, tested, good and economy thus it gets more favorite. The design system expects three type of key factors: availability to transfer information, easily usable and low budget based device [6].

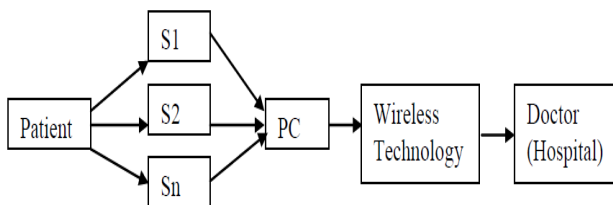


Fig. 1. Architecture of wireless health monitoring system

The common pattern of wireless health monitoring system is shown in figure.1. It depends on practical application of the Arrangement which could change. S1, S2..., Sn presents several sensors or wearable medical system. These system are equipped on patient's body for gather body parametric quantity as heart rate, temperature of body, blood glucose, blood pressure, ECG, etc [5]. By this type of sensors the signal is sent to own computer, smart phone, microcontroller, etc. The wireless or cabled transmission is applied for

communication in between sensors and PC. The gathered signals are sent to doctor or hospital for additional analysis and consequently medical treatments is provide to patients.

In house patient health monitoring scheme requires to fulfill the standards as the sizing and weight of the wearable devices which needs to be low and should not impact the natural body process of the patient[1].As well radiation concern had better viewed. Consumption of power will be low and life of system will be high. Furthermore the arrangement can provide the protection and privacy concern. As patient's health records give sensor based data and then it can be saved securely and sent to outside server .As well patient goes away from base environment system then it will not impact the monitoring method.

## II. LITERATURE REVIEW

A sensor network is specified as compiled by a big number of nodes which are deployed densely in the close law of proximity. All of these types nodes gather information, and its aim is to provide path this kind of information back to a sink node. The network must possess self-organizing capacities since the positioning of single nodes are not planned. Cooperation among these nodes is the superior feature of these type of network, where the grouping of nodes cooperates to disseminate the data collected in their locality for the user. Differences in between the sensor and ad-hoc networks are given below:

- Some nodes could be ordered of higher magnitude.
- Sensor nodes are densely deployed.
- Sensor nodes are prone to failure.
- Frequent topology alters.
- Broadcast communication prototype.
- Limited power, processing, and power capacities
- The possible absence of unique global identification per node.

*In 2012 Sabato Manfredi* presented a paper for the high diffusion of health care monitoring schemes which permits the nonstop patient to be remotely supervised and diagnosed by doctors. The problem of congestion comes because of the

traffic increment on the network capability. It is one of the most fundamental phenomena impacting the reliability of transmission system data in some network. The object of this paper is to make a truthful simulation environment for the healthcare system with including few of the main vital signs model, wireless sensor and mesh network protocols execution. The simulator environment is an effective network to study and measure the healthcare system operation in conditions of reliability and efficiency [1].

*In 2014 Swati Gawand* presented a paper for growing in healthcare monitoring systems which provide an uninterrupted remote patient monitoring and diagnostics by doctors. The wireless nature of network and use of sensing element provides a new method to the healthcare system. There has not any manual procedure is needed, all the operations are working automatic by the use of wireless sensor nodes. By WSN Doctor can control patient well with the help of methodology use in the wireless network. In this paper, they show an approximation for advance improvement in the healthcare system in India with the support of information technology by applying wearable body sensor and in body sensors for constant patient monitoring. This sensor is taking the reading of patient and transmits it to the doctor which is useful for the patient health improvement. In this paper, they provide different methods and conception new trends in wireless sensor network for constant health monitoring. The primary objective of this suggested system is serious patient can be controlled by the doctor as soon as possible. So to save the life of the serious patient, wireless sensor network provides a significant role [2].

*In 2012 D. Mahesh Kumar* presented a paper for Wireless Sensor Networks (WSNs) in health care scheme which gave an extraordinary effort in current years. However, in some of these research, the sensor works as a sensor information processing, health state decisions preparing and emergency messages transferring which are finished by a remote server. Transmitting and handing with a big data of body sensors take the much communication resource, get a burden to the remote server and delay the decision time and notification time. In this paper, we show a prototype of a good response time. This gateway is a connection and serves direction program particularly for WSN health care schemes at home environment. By making a bridge in between a WSN and public communicating networks, and being matched with an onboard information determination system and a light database. Our smart gateway scheme is enabled to produce patients' health state conclusions in low-power and low-cost planted system and get quick reply time in the emergencies. We have also configured the communication protocols in between WSN, gateway and remote servers. In addition Ethernet, Wi-Fi and GSM/GPRS communicating module are merged with the smart gateway to report and give notice information to caregivers [3].

*In 2014 Dr.Kathir[et.al]* represented a paper for various cluster-based routing protocols which are using for increase energy efficiency of WSN for healthcare application program and to notice crucial effects in cluster-based routing (CBR) protocol. It improve the parameters in order to expand their application rank. Today, WSNs are going popular, and lots of routing protocols have been advised in the literature. This paper surveys the WSNs energy-efficient CBR method that is applied for Healthcare Communication scheme. Recent advance and limits of past studies were highlighted. The routing communications protocol\* are classified according to their individual energy efficiency. We signify for researchers to identify quick areas that expect more attention and to suggest a new technique for improving the affectivity of existing protocols [4].

*In 2014 Khalifa AlSharqi[et.al]* represented a paper for present a ZigBee based wireless healthcare monitoring scheme that can allow real time online data about the health status of a patient. The suggested scheme is capable to transmit alarming messages to the healthcare professional about the patient's serious status. In addition the suggested system can transmit reports to a patient supervising system, which can be utilized by the healthcare professionals to take essential medical advices from anyplace of the World at any time [5].

*In 2013 Media Aminian[et.al]* represented a paper for a monitoring system that can monitor physiological parameters from different patient bodies. In the suggested system, a coordinator node has connected on the patient body to gather all the signals from the wireless sensors and transmitted them to the base station. The connected sensors from patient's body communicate to wireless body sensor network (WBSN) and they're capable to signified the heart rate, blood pressure, and many parametrs. This arrangement can observe the critical status, indicate an alarm to the patient and transmit an SMS/E-mail to the doctor. Also, the suggested system consists of many wireless relay nodes which are using for relaying the information by the coordinator node and transmit it to the base station. The main advantage of this scheme is to minimize the energy use as compare to old systems. It is able to extend the network lifetime, speed up and increase the communication coverage for increment in the freedom of patient life. We have developed this system in multi-patient architecture for hospital health care and checked it as compare to the other existing networks which are based on multi-hop relay node in conditions of coverage, energy consumption and speed [6].

*In 2014 Purnima[et.al]* introduced a paper for supervising to the patients. We have planned and built up a tested, energy effective patient monitoring system. It is capable to transmit parameters of patient. It enables the doctors to supervise patient's health parameters (temp, heartbeat, ECG, position) in time. Here the parameters of patient are evaluated continuously (temp, heartbeat, ECG) and wirelessly broadcast using Zigbee. This project allows a result for increase the dependability and flexibility by rising the performance and

power management of the patient monitoring system. In the actual suggested system, the patient health is continuously supervised and the adopted data is analyzed at a centralized ARM microcontroller. If a specific patient's health parameter comes below the threshold value, an automatic SMS is transmitted to the pre-configured physician mobile number using a standard GSM module which is connected to the ARM microcontroller. Here, we are applying Zigbee for wireless transmission so that physician can get the exact patient's information. The Patient Information will be the monitor on the Doctor PC which is continuously updated by Zigbee receiver module [7].

*In 2012 Narendra Kumar[et.al]* presented a paper for medical sensors which are used to gather physiological information from patients and transfer it to Intelligent Personal Digital Assistant (IPDA). This article shows a crucial role of body sensor networks in medicine to reduce the need for caregivers and help the chronically ill and elderly people live an independent life, besides providing people with quality care. Although offering important benefits, the field of wearable and implantable body sensor networks still looks major issues and open research problems which are looked and covered, along with some suggested techniques, in this paper [8].

### III. CONCLUSION

As new standards-based networks are present in this paper and small power systems are designed for monitor the patient information. We will begin to see the general deployment of wireless sensor networks. Sensor nodes can be supposed as small computers, highly basic in terms of their interfaces and their elements. All of this sensor network research is presenting a new method which can use in many health monitoring applications. In the future, we can apply these methodologies at the hardware.

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