

# **A Novel Approach for Health Monitoring System Using Wireless Sensor Network**

**Muneer Bani Yassein, Mohammad Hamdan, Hisham A. Shehadeh, and Lina Mrayan**

Health care is very expensive for countries with large population. Recently, wireless sensor networks are used to structure health care in many applications. Wireless Body Area Network (WBAN) and remote health monitoring has minimized the cost and improved the health care monitoring of patients' vital signs at hospital or outside hospital environment. Many types of wireless sensors are used for monitoring patient's health status, including those that are attached to the patient's body such as heart rate sensor, blood pressure sensor, temperature sensor, and those used on bed (bed sensor). Sensors use a modern communication technology, such as Zigbee, to transmit patients' health status parameters to the central monitor. We propose a novel approach for health monitoring system. The new approach depends on a smart health network, where patients are classified into a set of clusters, based on their health status. This approach helps manage communications between patients' sensors and the monitoring center, and reduce power consumption by allowing patients with critical health status to continually transmit their health parameters, and allowing patients with less critical and noncritical health status to partially transmit their health parameters. For the experiments, we used QualNet V5.2 simulator, using standard health parameters. Simulations results show that the proposed approach outperform the non-classified based health monitoring system in terms of reducing energy consumption in transmit mode by 30% and in receive mode by 30%. Also simulation results show an improvement of average Jitter by 13%, and an average end-to-end delay by 9.6%.

Yassein, Muneer Bani, **Shehadeh, Hisham A.**, and Mrayan, Lina, (2017), A Novel Approach for Health Monitoring System Using Wireless Sensor Network, International Journal on Communications Antenna and Propagation.