

# An Energy Efficient Method for Secure and Reliable Data Transmission in Wireless Body Area Networks Using RelAODV

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**Abstract** Growing population, sedentary lifestyle and spreading epidemics in today's world have led to a need for ubiquitous healthcare systems. Wireless body area network (WBAN) is one such concept which serves as a health monitoring technology. In a WBAN sensors are attached to various parts of the human body to monitor the health or in general the bodily functions such as heart rate and blood pressure of a person. The readings obtained from the patient are transmitted to a medical professional so that the patient will be constantly and remotely monitored. This gives location flexibility for the patient instead of being in a hospital or being bound at home. But one of the downsides in adopting WBAN is the security and privacy issues. Medical records are sensitive information and hence for a patient to trust the system, data needs to be sent securely. Moreover, every detail captured by the sensors need to be reliably transmitted to the medical authorities concerned. Another issue is the limited battery power of the sensors. A sensor should not be taxed to do too many computations as that will drastically drain the battery. In this work, we propose a power efficient methodology for secure transmission of patient data to the medical authorities. To improve the reliability of the system we propose a modified adhoc on-demand distance vector (AODV) protocol called RelAODV (Reliable AODV). Simulations have shown that the proposed methodology is energy efficient and improves the overall QoS of the system.

**Keywords** Wireless Body Area Networks · RelAODV · Sensor networks · Routing · Remote health monitoring

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