











ups. WBANs can help in ubiquitous and remote health monitoring of patients. Our documentation throws light upon analysing and providing efficient solutions to combat the two main issues which are energy consumption and secure data transmission.

We observed that RC5 encryption can prove to be a better security solution for ensuring the security of data transmission by stating various reasons and providing a comparison table which compares RC5 algorithm with other existing algorithms based on various parameters and shows that RC5 is efficient in terms of energy it consumes as well as provides good security. Next, we proposed an algorithm that primarily focuses as to how energy consumption can be reduced for which we incorporated the concept of rest mode in which a sensor is seen to consume lesser energy and providing increased longevity as compared to a node in active mode. We evaluated our algorithm by taking various cases into consideration, coding and simulating the same using Matlab, with the help of which we are able to state that our algorithm shows that longevity is increased by 25% when nodes are in rest mode and also that energy consumption is not the least but better than most of the cases.

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## REFERENCES

- [1] Kumar J., Ezhilarasi M. (2012). Adaptive security mechanism for PEAS in wireless sensor networks, *International Conference on Computing and Control Engineering (ICCCE 2012)*, ISBN 978-1-4675-2248-9 © 2012.
- [2] Qiu M.K., Gao W.Z., Chen M., Niu J.W., Zhang L. (2011). Energy efficient security algorithm for power grid wide area monitoring system, *IEEE Transactions on Smart Grid*, Vol. 2, No. 4, pp. 715-723.
- [3] Rivest R.L. (1994). The RC5 encryption algorithm, *Proc. 2nd International Workshop on Fast Software Encryption*, Leuven, Belgium, pp. 86-96. DOI: [10.1007/3-540-60590-8\\_7](https://doi.org/10.1007/3-540-60590-8_7)
- [4] Mohammad A.R., Rjoub A., Baset A. (2009). A low-energy security algorithm for exchanging information in wireless sensor networks, *Journal of Information Assurance and Security*, pp. 48-59.
- [5] Vermaand H.K., Singh R.K. (2012). Performance analysis of RC5, blowfish and des block cipher algorithms, *International Journal of Computer Applications (0975 – 8887)*, Vol. 42, No.16.
- [6] Yang Z., Mohammed A. (2013). Self-organization and green applications in cognitive radio networks, Al-Dulaimi A., Cosmas J., Mohammed A., Eds, IGI Global, pp. 290-300. DOI: [10.4018/978-1-4666-2812-0](https://doi.org/10.4018/978-1-4666-2812-0)
- [7] Roundy S., Leland E.S., Baker J., Carleton E., Reilly E., Lai E., Otis B., Rabaey J.M., Wright P.K., Sundararajan V. (2005). Improving power output for vibration-based energy scavengers, *IEEE Pervasive Compute.*, Vol. 4, No. 1, pp. 28-36. DOI: [10.1109/MPRV.2005.14](https://doi.org/10.1109/MPRV.2005.14)
- [8] Hoang D.C., Tan Y.K., Chang H.B., Panda S.K. (2009). Thermal energy harvesting from human warmth for wireless body area network in medical healthcare system, IEEE. DOI: [10.1109/PEDS.2009.5385814](https://doi.org/10.1109/PEDS.2009.5385814)
- [9] Sohrawy K., Minoli D., Znati T. (2007). Wireless sensor networks: technology, protocols, and applications, *Lecture Notes in Computer Science*, pp. 129-139. DOI: [10.1002/047011276X](https://doi.org/10.1002/047011276X)
- [10] Zhang Y., Xiong P., Luo Y., Li L. (2011). Design of remote home environment monitoring and health care monitoring system based on data confusion, *2011 IEEE International Conference on Automation and Logistics (ICAL)*. DOI: [10.1109/ICAL.2011.6024680](https://doi.org/10.1109/ICAL.2011.6024680)
- [11] Hanson M.A., Powell H.C. Jr., Barth A.T., Ringgenberg K., Calhoun B.H., Aylor J.H., Lach J. (2009). Body area sensor networks: challenges and opportunities, *Computer*, Vol. 42, No. 1, pp. 58-65. DOI: [10.1109/MC.2009.5](https://doi.org/10.1109/MC.2009.5)
- [12] Chen H., Liu M., Hao W., Chen Y., Jia C., Zhang C., Wang Z. (2009). Low-power circuits for the bidirectional wireless monitoring system of the orthopedic implants, *IEEE Transactions on Biomedical Circuits and Systems*, Vol. 3, No. 6, p.437. DOI: [10.1109/TBCAS.2009.2026283](https://doi.org/10.1109/TBCAS.2009.2026283)