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**PRIVATE AND SECURED MEDICAL DATA TRANSMISSION AND ANALYSIS FOR WIRELESS SENSING HEALTHCARE SYSTEM**

**Abstract:**

The convergence of Internet of Things, cloud computing, and wireless body-area networks (WBANs) has greatly promoted the industrialization of electronic-/mobile-healthcare (e-/m-healthcare). However, the further flourishing of e-/m-healthcare still faces many challenges including information security and privacy preservation. To address these problems, a healthcare system (HES) framework is designed that collects medical data from WBANs, transmits them through an extensive wireless sensor network infrastructure, and finally, publishes them into wireless personal-area networks via a gateway. Furthermore, HES involves the groups of send-receive model scheme to realize key distribution and secure data transmission, the homomorphic encryption based on matrix scheme to ensure privacy, and an expert system able to analyze the scrambled medical data and feedback the results automatically. Theoretical and experimental evaluations are conducted to demonstrate the security, privacy, and improved performance of HES compared with current systems or schemes. Finally, the prototype implementation of HES is explored to verify its feasibility.