WIRELESS SLEEP APNEA DETECTION SYSTEM

Sleep is a dynamic physiological process, its primary function being the restoration of the central nervous system. Sleep disorders affect a significant part of the population. The dynamic long term monitoring of human respiration plays a very important role in diagnosis and treatment. We describe a wireless monitoring system in–hospital or at-home detection with a high degree of accuracy of sleep related disorders in patients experiencing episodes of Obstructive Sleep Apnea(OSA). It occurs when there are repeated episodes of completely or partial blockage of the upper airway during sleep. During an obstructive sleep apnea episode, the diaphragm and chest muscles work harder to open the obstructed airway and pull air into the lungs. Breathing usually resumes with a loud gas, snort or body jerk. These episodes can interfere with sound sleep. They can also reduce the flow of oxygen to vital organs and cause irregular heart rhythms. OSA can occur in any age group, but prevalence increases between middle and older age. In our system, patient's respiratory signal is measured using a respiratory belt transducer. The sensor is low cost, light-weight, flexible, capable of long term monitoring and particularly suitable for wearable applications. Our goal in medical field includes reducing response time, earlier diagnosis, increasing the accuracy of long-time monitoring for people with medical disorders or during recovery from an acute event of surgical procedure, providing an enhancement of their quality of life. The acquired signal is transmitted and received by RF module (433 MHz), along with PIC 16F722 and signal is processed in LABVIEW.