

ABSTRACT

Millions battle a hidden enemy during sleep apnea, where breathing repeatedly pauses, disrupting slumber and leading to a cascade of health woes. From chronic fatigue and brain fog to increased heart disease risk, sleep apnea silently casts a long shadow. Early detection and management are crucial, but traditional diagnosis hinges on costly sleep labs, creating a significant accessibility gap. When breathing repeatedly stops and resumes while slumber, it is referred as sleep apnea. Untreated conditions lead to vigorous snoring during sleep followed with tiredness and can be fatal in future untreated conditions. The polysomnography nightly sleep study, which is the standard diagnostic method, is a laborious and time-consuming practice that exacerbates the patient's suffering. To mitigate these risks, we proposed the IoT based Somnoguard system to track the health parameters (heart beat & Electro Cardio Gram) & snoring sound which fluctuate during apnea. The heart rate and ECG graph are sensed through Electro Cardio Gram sensor and fluctuation in the snoring sound is sensed through SOUND SENSOR connected through the micro controller. All sensors data will be displayed by using Liquid Crystal Display and Global System for Mobile communication module. Based upon the data fluctuation in Heart rate, Electrolyte rate, saturation of partial pressure of dissolved oxygen in blood and the snoring intensity marks, the footprint of Apnea condition in the patient and the sleep apnea stage of that particular person can be accurately predicted by AI.