

ABSTRACT

Patients with breathing problems during sleep (sleep apnea) are increasing, almost more than 80% of people with this disorder are not diagnosed. Symptoms of sleep apnea are stopping breathing for more than 10 seconds. The purpose of this study is to design apnea monitoring devices to detect sleep apnea symptoms. The contribution in this study is a monitoring system or remote monitoring so that others can monitor the condition of the patient even though not accompanying him. In order to simplify the process of monitoring and diagnosing patients, a wireless apnea monitor was made with the Internet of Things system that is equipped with notifications on Android so that it can be quickly handled by patients. The design of this akat uses piezoelectric as a respiratory detection sensor which is placed on the patient's abdomen. The sensor output in the form of voltage is then conditioned on the PSA circuit. Using the ESP32 microcontroller as signal processing which is formed by the PSA circuit and processed into respiration values. Respiration value is then sent to the Android device using a Wi-Fi network. If a stop breathing event is detected for more than 10 seconds, the device will turn on the indicator and activate the notification on the android. The test results in this study the tool can send data properly and without loss data with a distance of 5 meters in a room and 10 meters in a different room. This tool can be implemented in the patient monitoring process so that it can reduce sufferers of sleep apnea disorders.

Keywords : *Apnea Monitor, Sleep Apnea, Sensor Piezoelektrik, Microcontroller ESP32, Android*