

ABSTRACT

Sleep apnea is a condition where there is a cessation of airflow in the respiratory tract for more than 10 seconds during sleep. The purpose of this study was to design a monitoring process for sleep apnea patients by analyzing the distance and speed of respiration using HC-12. This study uses a piezoelectric sensor to detect respiration. Data processing is carried out with Arduino, the results of data processing will be sent to the Personal Computer using the Delphi application via HC-12. This research is a system that works using wireless, and is equipped with an alarm to detect sleep apnea. If there is apnea detection, the tool can detect and provide notification properly with a buzzer that will sound if there is a respiratory arrest or apnea. The results showed that the largest respiratory error value was 1.4% and the smallest error value was 0.2%. The ability to transmit data can be sent at a maximum distance of 180 meters without obstructions and at a distance of 60 meters without obstructions. The results of the signal correlation test using baudrates variations, the farthest distance is 180 meters for 4800 and 9800 baudrates with a correlation value of 1. While for the correlation value of 1 at 115200 baudrates, the farthest distance is 100 meters. The results of this study indicate that wireless transmission with the HC-12 can be carried out at a certain distance.

Keywords: *Monitoring, Apnea, Respiration, HC-12*

