

Improving the Infant-Wrap (InfaWrap) device for neonates using myi-wrap mobile application

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ABSTRACT

Nowadays, a biomedical instrument holds a prominent position in medicine. The increased processing and integration capacity of electronic devices and the progress of wireless communications have enabled medical devices to be developed. InfaWrap device is a non-invasive method developed to measure the oxygen saturation, body temperature, and heart rate of a person. InfaWrap is designed to assist doctors and parents in tracking the baby's heart rate and oxygen level by using advanced wireless network sensors. The inability to detect any discomforts that the babies during the initial stage of life may lead to permanent disabilities and even death due to Critical Congenital Heart Disease (CCHD). In this paper, we focused on improving the Infant-Wrap (InfaWrap) for neonates using MyI-Wrap Mobile Application. A Bluetooth virtual serial port protocol is used to send test results to the smartphone from the oximeter sensor and from the temperature sensor. Two sensors were used; the MAX30100 heart rate sensor with the pulse oximeter and the LM35 with a synchronized Arduino platform with a mobile application. As a result, the device's sensitivity reaches 96% for oxygen, 81.03 bpm for heart rate, and 35 °C for body temperature. The performance value for 2 h begins to shift in minutes 100 but still below the maximum limit.

KEYWORDS

Neonates; Medical device; Mobile application; Infant-Wrap; Ankle; Pediatrics; Oximeter

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