



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Ayat Alwazir	Project Number J1002
Project Title Health Band	
Abstract Objectives The objective of this project is to build and program a Health Band to be worn like a watch to help predict and prevent heart attack, cardiac arrest, and strokes. This band is designed and built to be more affordable to more people around the world. A key fact from the WHO is that these cardiovascular diseases (CVDs) are the number one cause of death globally. Statistically that translates to an estimated 17.9 million people who died from CVDs in 2016. The WHO also states that 80% of CVD deaths take place in low- and middle-income groups GLOBALLY. Such risks associated with heart attacks, cardiac arrest, and strokes can be predicted by using the Health Band that has a connected app determining the patient's heart rate and body temperature. If the patient is experiencing low/high heart rate and unusual body temperature the app will send notifications to the phone of the patient, relative and doctor with the installed app alerting them of the warning vital sign values. It also alerts them if the person were to fall. After testing the band on 10 subjects, and comparing the results to the Apple Watch, the Health Band worked with the same accuracy. The Health Band is affordable, under twenty-five dollars, and therefore can reach more people around the world saving more lives. Methods Attached to the wrist band is the arduino micro, the IoT and pulse sensor, body temperature sensor, accelerometer sensor and I used the Mit App Inventor 2 to build the app. Results The Health Band was tested on 10 subjects and results showed it worked with the same accuracy and dependability as the Apple Watch monitoring a person's vitals and relaying the information to the app. Conclusions The Health Band is dependable and affordable (under twenty-five dollars) and therefore more accessible to people all over the world to capture vitals that warn of imminent heart attack, cardiac arrest or stroke. It is especially useful to those that have compromised access to urgent medical care and thus preventing cases of disability and death from CVDs.	
Summary Statement The Health Band is affordable to middle and low-income people who make up 80% of people with Cardiovascular Diseases, to raise their survival rate by capturing the warning signs to prevent heart attacks, cardiac arrests and strokes.	
Help Received Ms. Najwan Nasereldin, teacher and mentor, to learn to code and Mr. Mahmoud Belbese to learn electrical engineering skills.	