Asthemeter: A System for Recording and Predicting Asthma Attacks

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Purpose Asthma is a disorder that causes the trachea to shorten. During asthma attacks, it causes breathing difficulties, coughing, and even death. Asthma attacks are normally triggered by some type of pollutant or substance in the surrounding. However, there’s currently no cure to asthma and patients can only soothe the symptoms of asthma by taking pills. We hope to prevent the suffering of asthmatics by predicting and alerting them about upcoming asthma attacks. Procedure Asthemeter is an asthma prediction system consisting of a mobile app and a microbit chip. The metal oxide based gas sensor on the chip will detect the level of total volatile organic compounds(ppm) and the relative humidity of the surroundings. Both tVOC and the amount of dust indicated by the humidity are proven to be triggering asthma attacks, thus they are used as the attack indicators. When the tVOC or humidity exceeds the normal level and the app predicts an asthma attack, it will notify the user to take out their inhaler or to leave the current location, so as to prevent the attack. The app includes a list of information of previous attacks for the users’ future reference. Observations/Data/Results We have tested the sensitivity of our whole system by experimenting in different places with different TVOC levels in Hong Kong. We also compared the data received with our sensor to a TVOC meter and 9 in 10 of the trials have a similar reading. On the other hand, we contacted with The Hong Kong Asthma Society. Conclusions Thus, we believe that Asthemeter can benefit asthmatics significantly and reduce the frequency of asthma attacks by this prediction and alerting system. Our ultimate aim is to improve their lives despite living in this highly polluted world.

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