Various methods to recognize stress levels in students

Sir,

Numerous methods are brought forward to recognize stress levels. Few technologies are mainly based on physiological signals: Heart: Variability of heart rate (HRV), heart rate, blood pressure, pupil diameter, cortisol, and skin conductance. Heart rate, HRV, and blood pressure are mainly used to monitor sympathetic and parasympathetic nervous system.\(^1\)

According to Vrijkotte, heart rate, HRV, and blood pressure are used to evaluate work stress. This study results showed that a higher heart rate was statistically significant during work, systolic blood pressure was high during work and leisure time, and 24 h vagal tone was lower.\(^2\)

Mokhayeri et al. in their study used physiological signals which are multi-modal: Pupil diameter, photoplethysmogram, and electrocardiogram to distinguish relaxed and stressed conditions.\(^3\) However, in some methods, surveys are used.\(^4\)

In this modern world, smartphones are showing many new features such as sensors (accelerometer, microphones, and GPS) and usage-tracking functions (SMS and call histories). Further few studies have evaluated mood or individual trait using smartphones.

Sano and Picard conducted a study in which stress was recognized using wearable sensors and mobile phones. Stress was analyzed using wrist sensor (skin conductance and accelerometer), mobile phone usage (short message service, call, screen on/off, and location) and surveys (mood, stress, tiredness, sleep, general health, caffeinated beverage intake or alcohol, and electronics usage).\(^5\) Thus, smart mobile phones and sensors can be used to measure behavioral and physiological data in our day-to-day lives.

A recent study conducted by us which is still unpublished is on recognition of stress, heart rate, and oxygen saturation in dental students who are appearing for university practical examination. The values were found to be significantly higher in pre-viva than post-viva. Stress, heart rate, and oxygen saturation were measured using a sensor and S-health software present in smartphone (Samsung S7 edge). Index finger of the participant was asked to place for 1 min on the sensor present behind the smartphone-Samsung S7 edge. Once the software measures, the values appear on the screen.

This study is based on a biomarker for stress such as skin conductance. Here, eccrine sweat activity which is controlled only by sympathetic nervous system is evaluated.

Examination stress is one of the greatest among causes of mental stress among students. Very often examination is a factor, which may cause psychical injury or shock and may become a trigger to activate depression. Recently, strong evidence was obtained, indicating that examination stress has a negative effect on the students nervous, cardiovascular, and immune systems.\(^6\)

To conclude, smartphone sensor with S-health software to measure stress levels has many advantages than other methods. Some of the advantages are devices that users always can carry and wear, it is a non-invasive method, self-assessment can be done at any point of time, and it is easily assessable.

Once the stress levels are recognized by self-assessment, skills for stress resistance should be implemented on health-saving technologies in student lifestyle. In addition, an efficient relaxation program as well as counseling services and regular yoga should be done to enhance their academic performance.

Santosh Hunasgi, Anila Koneru

Department of Oral and Maxillofacial Pathology, Navodaya Dental College and Hospital, Raichur, Karnataka, India

Correspondence

Dr. Santosh Hunasgi, Department of Oral and Maxillofacial Pathology, Navodaya Dental College and Hospital, Raichur-584 103, Karnataka, India.

Phone: +91-9448022496, E-mail: drsantosh31@gmail.com

Received 15 March 2017

Accepted 22 April 2017

Doi: 10.15713/ins.jcri.162

References

4. Cohen S, Kamarck T, Mermelstein R. A global measure of


How to cite this article: Hunasgi S, Koneru A. Various methods to recognize stress levels in students. J Adv Clin Res Insights 2017;4:76-77.