Methods and systems for measuring a stress indicator, and for determining a level of stress in an individual

Market sector: computer programs, stress level

Type of opportunity: licensing and/ or co-development

Scope of the problem

The social and medical problems associated with stress are clearly growing and seriously affecting not only adults but also young and children.

Objective and reliable measurement of the stress level is a crucial tool for healthcare systems and for management of mental conditions for example through a continuous remote assessment for the subject follow-up. Several methods for measuring stress have been proposed in the past, one of them is based on using psychometric tests, but they take a significant amount of time and they cannot be administrated repetitively in short periods of time. Moreover, the results of those tests are sensitive to fake answers thus making an objective assessment inviable. Other type of stress evaluation is based on the measurement of biochemical markers derived from e.g. blood and saliva samples. Important disadvantages are that invasive methods need to be used, and analyzing samples is time consuming and requires sophisticated laboratory equipment. There are further methods known that rely on non-invasive measurements such as e.g. heart rate, transpiration or pupil dilatation as rough indicators of stress, however, they cannot give a reliable, repetitive and objective measurement of stress because it is influenced by many other external uncontrollable factors. Therefore, there is a need for systems and methods for determining stress that at least partially reduce some of the aforementioned drawbacks.

Patient need addressed: anxiety, pathological stress. Other mental disorders are under study

Our innovation:

- A method of measuring a stress indicator in a subject comprising non-invasively and synchronously measuring one or more heart rhythm, sweat or arterial parameters. It also comprises a weighted function of the said parameters to define the stress indicator.
- A computer-implemented method, for diagnosing stress comprising measuring a stress indicator, comparing the measured stress indicator with a predefined threshold for the stress indicator; and diagnosing stress if the measured stress indicator is above the predefined threshold.
- A computer program for determining a stress indicator in a subject.
- A system for determining a stress indicator in a subject comprising a computing module which is configured to receive heart rhythm, perspiration or arterial signals.

Competitive advantages: non-invasive, user friendly, short and continuous methods for stress measurement, reliable indication of stress, accurate information on changes in the hypothalamic–pituitary–adrenal axis (HPA axis) and on the autonomic nervous system (ANS) of the subject, a quantitative assessment of stress remotely can be made.

Market size/ opportunity: In 2022, the global health care equipment & supplies market is forecast to have a value of €435.7 billion (18.6% for Other equipment segment). Geographical segmentation: USA 38.3%, Europe 31.7%, Asia-Pacific 24.2%, Middle East 0.8%, Rest of the World 5.1% (Marketline 0199-2067, November 2017). Social Anxiety Disorder (SAD) is economically costly, mainly due to losses in productivity: estimated yearly costs are $385 M/ M inhabitants (lifetime prevalence of 12%) (Landy, Lauren N., 2017).

Intellectual property

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