mHealthySleep: early detection, assessment, and management of sleep disorders at home.

The Challenge

Sleep disorders are medical conditions that affect sleep quality, producing symptoms of varying severity and are highly prevalent in the general population. Obstructive sleep apnea (OSA) is one of the most common sleep disorders, with a prevalence ranging from 9% to 38% in the overall population and reaching much higher values in some elderly groups. OSA has been related to an increased risk of cardiovascular and cerebrovascular morbidity and mortality. Most patients remain undiagnosed and untreated as conventional techniques to diagnose OSA do not provide a method for monitoring sleeping of a person in a reliable and cost-effective way. Therefore, there is an increasing need for simpler alternatives for OSA detection and monitoring.

The Market

According to GlobalData forecasts, the remote patient monitoring (RPM) market will reach $760M by 2030, up from $548.9M in 2020. The market is driven by certain trends, such as management of chronic diseases, increase in aging population, urge for decrease of healthcare costs. Integration of enabling technology for RPM in the healthcare system or in solution provided directly to patients has the potential of a huge social impact in patient care. It is a thriving moment for RPM technologies. Following COVID-19 pandemic, patients have become more and more used and comfortable in using RPM system, they are also more aware, as taxpayers, of the overall importance for these solutions in terms of efficiency and cost reduction.

The Asset

mHealthySleep is a novel tool based on unobtrusive sensors and automatic algorithms for the non-invasive detection, diagnosis, monitoring, and management of sleep disorders in a simple and cost-effective way. It is based on the advanced analysis of biomedical signals, that could be recorded with smartphones. This is a novel approach not only for the sensor setup (smartphone) but also for algorithms designed to monitor digital biomarkers relevant for the different patients/users. For some use cases, the solution could integrate features that interact with the patient in order to deliver therapy.

The asset value

- Use of off-the-shelf sensors
- New digital biomarkers from multimodal signals
- Modular and scalable
- Implementable on different type of products (mobile application or wearable device)

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EXCELENCIA SEVERO OCHOA

New mHealth system, based on smartphone sensors and wireless devices

Uses

Patients with Obstructive Sleep Apnea (OSA)

- early diagnosis
- patient monitoring at home
- therapy monitoring at home
- optional positional therapy

Patients with Spinal Cord Injury (SCI) and Sleep Disorders

- early diagnosis
- patient monitoring at home
- therapy monitoring at home

Healthy subjects

- monitoring of sleep quality

Scientific Project Leader

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Stage of development

TRL 4/5: the technology has been tested in small-scales studies on healthy subjects and patients, both in the hospital environment and at home

Intellectual Property Status

European patent application filed, priority date in July 2021

Relevant publications

https://doi.org/10.3390/s21113689
10.1109/ACCESS.2020.2987488
10.1109/ACCESS.2019.2939749

Exploitation plan

Spin off creation

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