CAREWEAR: USING WEARABLES IN MENTAL HEALTHCARE

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1. INTRODUCTION

Wearables can collect physiological data continuously. This can give information both on vulnerability factors and the process of recovery in mental disorders (1). However, current technological applications in this field are limited. Burnout and depression are highly prevalent mental disorders that have a large impact on psycho-emotional wellbeing and are associated with substantial societal and economical costs. The Carewear project (Vlaio Tetra HBC.2016.0099) aims to enrich current employee assistance programs and the treatment of depression with the implementation of wearable technology. Within Carewear an online software platform and accompanying clinical guidelines were developed. These allow healthcare professionals to use physiological data as a useful addition to their current practices. Two use cases are defined to investigate the added value of this implementation of wearable technology to help prevent burnout and treat depression. Clients are asked to wear a wristband that registers several physiological parameters. Algorithms using artificial intelligence are being developed to translate these physiological parameters into relevant data that can be used to assist in the assessment of the mental health of the subject. This physiological data can be inspected and completed on the online Carewear dashboard and consequently discussed in regular consults. Altogether, the Carewear project aims to encourage the use of wearable technology in mental healthcare by providing a user-friendly platform and clinical guidelines. Both are tailored for elevated stress and depressive symptoms, which makes physiological data accessible and comprehensible for both healthcare professionals and clients.

2. MATERIALS AND METHODS

A software platform and accompanying clinical guidelines have been developed. These clinical guidelines allow healthcare professionals to use physiological data to inform on potential vulnerability factors as well the process of recovery. In two use cases this platform and its guidelines will be tested and the added value of this implementation of wearable technology in current protocols to prevent burnout and treat depression will be investigated.

Using a wearable in the form of a wristband blood volume pulse, skin conductance, skin temperature and movement are registered. Algorithms using artificial intelligence are being developed to translate these physiological parameters into relevant data that can be used to assess the mental health of the subject. These are the heart rate variability, stress peaks using skin conductance, skin temperature, and heart rate, and physical activity.

Both client and professional can report on the physiological data on the platform and discuss the findings in regular consults.

3. RESULTS AND DISCUSSION

Wearable technology has a large potential in the field of mental healthcare but there are still some challenges in the practical implementation. The current wrist-worn wearables still have difficulties to produce valid signals which leads to more postprocessing which decreases the accuracy of the physiological data. Current research will determine their usability in our context.

References

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