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LETTER TO THE EDITOR

The potential role of wearable technology in monitoring and predicting cardiovascular events in high-risk individuals

O papel potencial da tecnologia vestível na monitorização e previsão de eventos cardiovasculares em indivíduos de alto risco

Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality worldwide.[1] While significant advancements have been made in the prevention and treatment of CVDs, they still pose a significant burden on healthcare systems and society as a whole. One way to reduce this burden is to identify individuals who are at high risk of developing CVDs and to implement preventive strategies to reduce their risk.

Wearable technology has emerged as a promising tool for monitoring and predicting cardiovascular events in high-risk individuals.[2] Wearable devices, such as smartwatches and fitness trackers, can provide continuous monitoring of physiological parameters such as heart rate, blood pressure, and physical activity levels.[3] This information can be used to identify early signs of cardiovascular events and help provide timely interventions to prevent or mitigate their effects.

A study conducted by Turakhia et al.[4] showed that a smartwatch-based irregular pulse detection algorithm can accurately identify atrial fibrillation, which is a major risk factor for stroke. Similarly, a study by Kuwabara et al.[5] showed that a watch-type wearable device for self-blood pressure measurement can provide accurate readings and can potentially replace traditional cuff-based blood pressure monitoring devices.

Sleep is also an important factor in cardiovascular health, with sleep deprivation and poor sleep quality associated with an increased risk of CVDs.[6] Wearable devices can monitor sleep patterns and provide recommendations to improve sleep quality, which could have significant benefits for cardiovascular health.

Wearable technology may also be able to predict cardiovascular events by analyzing physiological parameters and detecting abnormal patterns. Machine learning algorithms can analyze large datasets of physiological parameters and identify patterns that are associated with cardiovascular events. A study by Attia et al.[7] showed that a machine learning algorithm can accurately predict the occurrence of atrial fibrillation using ECG signals. This, in combination with the development of accurate ECG readings from smartphones,[8] may provide the groundwork for the accurate prediction of cardiovascular events by various wearable devices in high-risk individuals.

While wearable technology has significant potential for monitoring and predicting cardiovascular events, there are also some limitations and challenges that need to be considered. One challenge is the accuracy of the data collected by wearable devices.[9] While many wearable devices have been validated for accuracy, there are still concerns about the reliability and validity of some devices, particularly in individuals with specific health conditions.

Another challenge is the need to ensure the privacy and security of the data collected by wearable devices.[10] As wearable devices become more widespread, there is a risk that sensitive health information could be compromised if appropriate security measures are not in place.

Wearable technology has the potential to revolutionize the way we monitor and predict cardiovascular events in high-risk individuals. By providing continuous monitoring of cardiovascular parameters, insights into physical activity and sleep patterns, and predictive analytics, wearable devices could help identify individuals at high risk of developing CVDs and facilitate timely interventions to prevent or mitigate their effects. While there are some limitations and challenges that need to be addressed, the potential benefits of wearable technology in cardiovascular health are significant and warrant further research.

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Conflicts of interest

The authors have no conflicts of interest to declare.

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