

Vascular disease risk analytics: use case

The significance of patient data conforming to the FAIR standard extends to wearable data, for instance collected from a Fitbit. This data can include activity level, resting heart rate, and hours of sleep of a patient. Integrating such data with patient records can open us many applications regarding health analytics and predictive models. This was tested out on investigating the risk of vascular diseases based on data from wearable devices.

FAIR stands for **F**indable, **A**ccessible, **I**nteroperable and **R**eusable. By making data FAIR, data reuse is improved, by ensuring that one can easily find and access data, and that the data is interoperable so that it is usable in different places and systems.

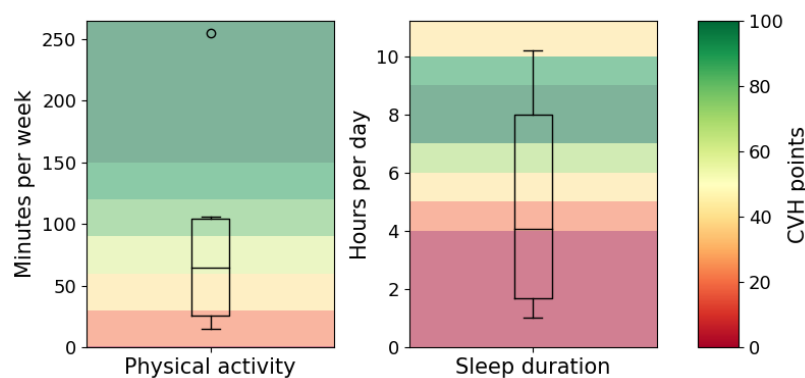


Figure 1. Example of visualisations of wearable data.

An architecture was created in which the data is sent, together with the Outpatient data, to a FAIRifying platform by data clerks, where it is converted into a FAIR and machine-actionable format. Once the data has been made FAIR, analytics can be conducted, for instance through Machine Learning Models. Such data is also suitable for more effective monitoring of the patient.

RECOMMENDATIONS

1. Develop a national framework that governs the integration of wearable health data with traditional patient health records. This framework should ensure that wearable data is FAIR (Findable, Accessible, Interoperable, Reusable) and compatible with existing healthcare data systems
2. Develop and enforce standards for data quality and consistency in wearable data to ensure that data from different devices and manufacturers can be reliably integrated into healthcare systems. Establish guidelines for data collection frequency, accuracy, and error margins for wearables.
3. Promote the use of Federated Learning to allow wearable data analytics across multiple healthcare facilities without compromising patient privacy.

Further reading:

Kievit, R.; Kawu, A.; van Reisen, M.; O’Sullivan, D. and Hederman, L. (2024). Exploring the Design of Low-End Technology to Increase Patient Connectivity to Electronic Health Records. In Proceedings of the 17th International Joint Conference on Biomedical Engineering Systems and Technologies - HEALTHINF; ISBN 978-989-758-688-0; ISSN 2184-4305, SciTePress, pages 194-200. DOI: 10.5220/0012460900003657