



# Editorial: The Role of Real World Evidence (RWE) for Digital Health

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## Editorial on the Research Topic

### The Role of Real World Evidence (RWE) for Digital Health

Patients' everyday health status is reflected on clinical outcomes and living habits that can be captured using electronic systems. These captured Real-World Data (RWD) can be collected from various sources, including IoT devices, patients' diaries, and questionnaires. Real-World Evidence (RWE) is the clinical evidence that can be derived from the processing of RWD to determine benefits and risks of drugs or interventions. Both RWD and RWE are terms that are widely used these days in clinical research, nevertheless their application is key for Digital Health.

This Research Topic identifies innovations and best practices for the use of RWE to push clinical research to its boundaries and contribute to digital health by the creation of personalized interventions of higher efficacy. The topic has prioritized the use of edge technologies in life sciences and digital health, including digital biomarkers from RWD; processing of IoT streams; AI/ML processing in Software as for Medical Devices (SaMD); virtual coaching as digital intervention and the use of Artificial Intelligence / Machine Learning (AI/ML) in Digital Therapeutics (DTx). The common denominator from all contributions is the Real-World Evidence collected or generated.

The articles of this Research Topic are partially influenced by the COVID-19 pandemic, with two studies related to ML processing for mortality prediction and the role of digital health as a means to address the challenges from COVID-19 in one country. The article "*Machine Learning Based Clinical Decision Support System for Early COVID-19 Mortality Prediction*" proposes ML methods based on blood tests data to predict COVID-19 mortality risk and accelerate the decision-making process in healthcare systems for focused medical treatments in an accurate, early, and reliable manner. The article "*The Contribution of Digital Health in the Response to COVID-19 in Vietnam*" presents a wide range of digital health applications has been deployed in Vietnam to strengthen surveillance, risk communication, diagnosis, and treatment of COVID-19. Another focus of this topic is AI-driven virtual coaching for rehabilitation and digital therapeutics, which aims to be an essential feature in next generation digital health systems. The article "*Virtual Coaching for Rehabilitation: The Participatory Design Experience of the vCare Project*" presents the methodology adopted to involve end-users (i.e., neurological patients, healthy elderly, and health professionals) in the evaluation of a novel virtual coaching system based on the personalized clinical pathways and to present the results obtained from these preliminary activities. The article "*Digital Therapeutics: Virtual Coaching powered by Artificial Intelligence on Real-World Data*" describes a DTx methodology covering three main components: observation, understanding and coaching, with focus on an emerging form of automated virtual coaching, delivered through conversational agents allowing interaction with end-users using natural language. Furthermore, the article "*Federated Networks for Distributed Analysis of Health Data*" describes the use of federated networks for distributed analysis of health data, which draws on experience from the

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World Economic Forum Breaking Barriers to Health Data project, the Personal Health Train and Vantage infrastructures, and industry insights. The article “*JTrack: A Digital Biomarker Platform for Remote Monitoring of Daily-Life Behaviour in Health and Disease*” describes a secure, reliable and extendable open-source solution for remote monitoring in daily-life and digital-phenotyping. Finally, the article “*Building an Artificial Intelligence Laboratory Based on Real World Data: The Experience of Gemelli Generator*” describes a challenging initiative of a large hospital to give meaning the RWD by means of AI and drive digital health.

It is expected that in the next years RWE will be the main driver for the development of digital interventions and a major parameter for the evaluation of Digital Health solutions in general. This will lead into the rise of digital biotech companies that focus their research and development on the processing of RWD and filing of evidence related to the impact of digital interventions to health-related endpoints.

## AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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