Chapter 5
Can Digital Technologies Change Schizophrenia Care?
Opportunities and Challenges

Raquel Simões de Almeida

https://orcid.org/0000-0003-4703-1712
School of Health, Polytechnic of Porto, Portugal

Tiago Silva
Independent Researcher, Portugal

ABSTRACT

Digital technologies like mobile applications, chatbots, virtual reality, and other technological solutions are already revolutionizing mental health care, including schizophrenia care. Digital mental health interventions are not intended to replace mental health professionals, in fact, they are a contribution to enhance prevention, improve diagnosis, and democratize monitoring and treatment. These systems usually handle large-scale sensitive data and require modern solutions to safely process and store data. Cloud-based services can respond to this challenge, but it is important to be aware of the current technical boundaries as well of dangers of health data handling. This chapter provides a review on the subject, presenting several data-driven applications for schizophrenia care and addressing some concerns such as efficacy, privacy and confidentiality, data security, accountability, engagement, ethical implications, and education and training. Some recommendations on clinical integration are also presented.

INTRODUCTION

Computer science has already expanded into all areas of life including economy, finance, entertainment, and life sciences. Mental healthcare is no exception. The opportunities for developing digital technologies to assist health professionals and patients with mental health problems have significantly increased and they seem to provide effective, scalable, and cost-efficient options (Roth et al., 2021). These solutions are fundamental as mental health problems have been increasing globally and access to treatment ends up not being easily available to everyone who needs it.

According to Mental Health America, today 9.86% of American adults are experiencing a mental illness, equivalent to nearly 50 million people, and 4.91% are experiencing a severe mental illness such as schizophrenia. In 2021, more than 150 million people in the European region lived with a mental health condition, and only 1 in 3 people living with depression received the care they needed. This is the main reason why the Pan-European Mental Health Coalition assumes the digitalization of mental health services as one of its objectives (WHO, 2021).

Even though new digital solutions pop up every day, prevention, assessment, and intervention in mental health, especially in certain diagnoses such as schizophrenia, raise many concerns from different stakeholders. While some wonder if smartphones and digital technology could induce paranoid delusions in people with schizophrenia spectrum disorders, research shows that people with these diagnoses are interested and eager to use innovative tools to possibly augment their care and recovery. Nevertheless, there are several challenges in the implementation of these technologies, such as (1) the lack of research; (2) the lack of clear standards for the safety of their daily use; (3) unclear roles of technology and a shift in the responsibilities of all parties; (4) constraints of data confidentiality; and (5) the lack of a user-centered design that meets the particular needs of patients with schizophrenia (Chivilgina, Elger, & Jotterand, 2021). Also, the treatment of mental illness has a very important relational part and because of that, the concept of "digital therapeutic alliance" (therapeutic quality of online psychological therapy or digital mental health interventions) should be better studied (Lederman & D'Alfonso, 2021).

Examples of these technologies include for instance healthcare artificial intelligence chatbots that accompany the person 24/7, serious games that allow the patient to learn more about the illness, mobile applications for illness self-management, or even the use of virtual reality programs to develop specific skills, among other applications. There are already very positive impacts of the use of these technologies, for instance, by using the patient's smartphone it is possible to collect daily data that clinicians can analyze, and if some of them are indicators of relapse, a timely and personalized intervention can be set.

Related Content

Providing Healthcare Services in the Virtual Environment
N. Raghavendra Rao (2019). *Global Virtual Enterprises in Cloud Computing Environments (pp. 145-170).*
www.irma-international.org/chapter/providing-healthcare-services-in-the-virtual-environment/219554

From Cloud Computing to Fog Computing: Platforms for the Internet of Things (IoT)
Sanjay P. Ahujaand Niharika Deval (2018). *International Journal of Fog Computing (pp. 1-14).*
www.irma-international.org/article/from-cloud-computing-to-fog-computing/198409

Overview of Big Data-Intensive Storage and its Technologies for Cloud and Fog Computing
Richard S. Segall, Jeffrey S. Cookand Gao Niu (2019). *International Journal of Fog Computing (pp. 1-40).*
www.irma-international.org/article/overview-of-big-data-intensive-storage-and-its-technologies-for-cloud-and-fog-computing/219362

Meta-Heuristic and Non-Meta-Heuristic Energy-Efficient Load Balancing Algorithms in Cloud Computing
Rojalina Priyadarshini, Rabindra Kumar Barikand Brojo Kishore Mishra (2020). *Modern Principles, Practices, and Algorithms for Cloud Security (pp. 203-222).*
www.irma-international.org/chapter/meta-heuristic-and-non-meta-heuristic-energy-efficient-load-balancing-algorithms-in-cloud-computing/238909

Energy Efficient Real-Time Distributed Communication Architectures for Military Tactical Communication Systems
Bora Karaoglu, Tolga Numanoglu, Bulent Tavliand Wendi Heinzelman (2015). *Enabling Real-Time Mobile Cloud Computing through Emerging Technologies (pp. 35-82).*
www.irma-international.org/chapter/energy-efficient-real-time-distributed-communication-architectures-for-military-tactical-communication-systems/134202