

# Advancing Cardiovascular Health and Longevity: The Impact of Telemedicine on Cardiac Rehabilitation in Romania

Stefan Sebastian Busnatu<sup>1,2</sup>, Liviu Ionut Serbanoiu<sup>1,2</sup>, Andreea Elena Lacraru<sup>1,2</sup>, Maria Alexandra Pana<sup>1,2</sup>, Dragos Trache<sup>1,2</sup>, Plesu Elena<sup>1,2</sup>, Catalina Liliana Andrei<sup>1,2</sup>

<sup>1</sup> Carol Davila" University of Medicine and Pharmacy Bucharest, Romania

<sup>2</sup> Department of Cardiology, Emergency Hospital "Bagdasar-Arseni", Bucharest, Romania

## Abstract

Cardiovascular diseases (CVD) remain the leading cause of death worldwide, with over 18.6 million deaths annually, as reported by the American Heart Association in 2021. Romania ranks among the countries with the highest cardiovascular morbidity rates in the EU, despite an average annual increase of 10.3% in healthcare expenditures between 2008-2019. However, patient participation in cardiac rehabilitation programs remains notably low. This study aimed to assess the current access to cardiac rehabilitation and tele-rehabilitation programs in Romania, as well as the population's perception of telemedicine. A prospective observational study was conducted using an online survey with 1115 respondents, primarily aged between 41 and 60 years. Results indicated that while 80% of respondents use smartphones and nearly 50% have access to laptops or smart TVs, only 17% of those with CVD received rehabilitation recommendations, with just one-third being referred to specialized centers.

To address these challenges, the CardiOnline application was developed to integrate telemonitoring with real-time communication between patients and healthcare providers. A pilot study involving 24 patients demonstrated increased adherence to using smart devices and monitoring blood pressure, highlighting the potential for improved patient outcomes. The findings suggest that digital tools, such as telemonitoring applications, can play a crucial role in enhancing both primary prevention and the management of CVD patients in Romania.

**Keywords:** cardiovascular diseases, cardiac rehabilitation, telemedicine, Romania, digital health