TB-Monitor: Advancing Tuberculosis Management Through Innovative Technologies

Costin Teodor STREBA[a,*], Mircea-Sebatian ŞERBĂNESCU[b], Alina MIULESCU[c], Victor GRECU[d], Cristina CĂLĂRAŞU[a], and Patricia RĂDULESCU[a]

[a] Department of Pulmonology, University of Medicine and Pharmacy of Craiova, Petru Rareş Str., no. 2, 200349 Craiova, Romania.
[b] Department of Medical Informatics and Statistics, University of Medicine and Pharmacy of Craiova, Petru Rareş Str., no. 2, 200349 Craiova, Romania.
[c] Doctoral School, University of Medicine and Pharmacy of Craiova, Petru Rareş Str., no. 2, 200349 Craiova, Romania.
[d] "Victor Babeş" Clinical Infectious Disease and Pulmonology Hospital, Calea Bucureşti, no. 64, 200515 Craiova, Romania.
E-mail(*): costinstreba@gmail.com

* Author to whom correspondence should be addressed;

Abstract
Tuberculosis (TB) remains a major global health challenge, requiring ongoing efforts in surveillance, treatment optimization, and adherence monitoring. Effective TB management relies on early detection, consistent treatment compliance, and the prevention of disease transmission. Current monitoring approaches, including microbiological diagnostics, imaging techniques, and adherence-tracking systems, are often hindered by issues such as delayed diagnosis, drug resistance, and patient non-compliance. While high-income countries have established national TB surveillance systems, low- and middle-income nations continue to face significant gaps in patient monitoring and personalized treatment adjustments. To address these challenges, a digital TB monitoring platform has been developed, integrating mobile technology and the potential application of artificial intelligence to enhance patient engagement and healthcare decision-making. This platform enables patients to track medication adherence, symptoms, and lifestyle factors, while providing healthcare professionals with real-time access to patient data, allowing for timely treatment modifications and personalized interventions. Insights from the initial implementation phase highlight variations in patient engagement and the need for further optimization of digital adherence tools. Nationwide adoption of this platform would require regulatory support and policy integration but holds great potential to improve TB management, enhance treatment outcomes, and contribute to global TB eradication efforts.

Keywords: Mobile Application; Tuberculosis; Adherence-tracking; Personalized Treatment.