Chapter 34
A Collaborative M-Health Platform for Evidence-Based Self-Management and Detection of Chronic Multimorbidity Development and Progression

Kostas Giokas
National Technical University of Athens, Greece

Panagiotis Katrakazas
National Technical University of Athens, Greece

Dimitris Koutsouris
National Technical University of Athens, Greece

ABSTRACT

The ageing process of EU population has played a key role raising the prevalence of chronic disease, with more than 80% of people in the last age group (65-74) reported to be having three or more long-term Multimorbidity or Multiple Chronic Conditions (MCCs). The main problem is that currently, clinicians have limited guidance, as well as evidence of how to approach care decisions for such patients. As a consequence, the understanding of how to best take care of patients with multimorbidity conditions, may lead to improvements in Quality of Life (QoL), utilization of healthcare, safety, morbidity and mortality. The root of this problem is not narrowly confined to guidelines development and application, but is inherent throughout the translational path from the generation of evidence to the synthesis of the evidence upon which guidelines depend.

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INTRODUCTION: OBJECTIVES OF PRESENT RESEARCH

The vision of the proposed research is to develop an *m-health ecosystem*, leading to an evidence-based self-management and detection of chronic *multimorbidity development and progression*, where clinical data will be periodically collected by an *engaged* and *empowered chronic patient* through an extensive on–intrusive use of market available and ad hoc made m-health apps that co-produce additional clinical data. The ecosystem above systematically *interoperates and integrates* into the Electronic Health Records available in the *private cloud environment* of local or national European healthcare organizations. This challenging approach is expected to highly contribute and increase the self-management attitude of the patient, as well as the research conducted on multimorbidity, by supporting clinicians and researchers to understand the clinical course of disease in detail and improve clinical outcomes. Three main layers of Scientific and Technological Objectives represent the load-bearing pillars of the proposed *m-health ecosystem* including *knowledge, applications and services* that will enable more effective and efficient:

1. **Health Promotion:** Improve self-management, patient management and patient-patient/patient-doctor collaboration:
    a. Promote self-management pathways for chronic elderly patients and increase the level of awareness of their health condition.
    b. Create and Test an m-health ecosystem enabled, personalized, patient – centric care model in different European healthcare systems leading up to a step forward in the cross-border harmonization.
    c. Increase the level of patient-patient and patient-doctor interaction by encouraging the patient to have a more active role in changing their behaviour by reaching healthcare goals.
2. **Public Health:** Combine the benefits of self-management with the need of increased research evidence on multimorbidity:
    a. Create additional insights to increase the level of knowledge in the estimation of the occurrence and distribution of multimorbidity.
    b. Contribute to and Support the development of consensus on self - management and care of multimorbidity, engaging it as a subject on expert panels focused on the care of older adults.
    c. Increase the daily evidence of the role of contextual and lifestyle-related factors in the development of multimorbidity.
    d. Aggregate and analyse the informative asset generated by the platform to enrich and better describe the natural history of multimorbidity both on a patient and community level.
3. **Standard, Business Models and Regulations:** Increase the patients and doctor confidence in technology as a foundation to create an holistic care process driven as a patient-centric healthcare system:
    a. Design *innovative care models* supported by an effective combination of disruptive technologies like *cloud, social, mobile* and *analytics*, which are developed in full respect of *patient privacy* and *safety*.
    b. Deploy a set of application and services contributing to the widespread of most relevant standards and protocols for interoperability of personal health systems (e.g. Continua Health Alliance, HL7, IHE, etc.) as well as IEEE based connectivity standards