

Introduction of novel complex integrated care models supported by digital health interventions in European primary settings: a scoping review

Introduction: Innovative healthcare models have been researched intensively in the last decade, however, there remains the need to develop more comprehensive organisational care models to manage chronic conditions in primary healthcare¹, considering also the opportunities given by the advent of the digital age², and its implications for healthcare delivery. The objective of the review was to assess and map methods, interventions and outcomes investigated regarding the introduction of novel complex integrated care models supported by digital health interventions in the primary care setting, as well the level of integration achieved.

Methods: we performed a scoping review based on the Joanna Briggs Institute manual and using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) Extension for Scoping Reviews for reporting. A systematic and extensive three-step search of PubMed, Web of Science and Scopus was conducted to identify articles that described, in the last 10 years, the introduction of complex integrated care models supported by digital health interventions (DHI) in the primary care settings of the European context. Data extraction and eligibility were performed by two authors independently.

Results: A total of 54 studies was included. The complex integrated care models introduced, along with a DHI, at least one innovation in their structure or in the modality of care delivery: either a new figure (44%), interprofessional collaboration (37%), new functions, such as the introduction of person-centred care (59%) or population stratification (11%). As regarding the main categories of digital support tools, 56% of the included studies implemented monitoring/management platforms and apps for chronic conditions, followed by apps/platforms promoting a healthy lifestyle to reduce the risk of developing a disease (17%), teleconsultation systems (13%), computer-based decision support systems (9%) and electronic healthcare records. In terms of forms of integration³, 50% of the studies focused on horizontal integration, with the development of multi-disciplinary teams and/or care networks that support a specific client group. 19% of the models were based on vertical integration, with integrated care across primary, community, hospital and tertiary care services resulting in care pathways for people with specific diseases and/or care transitions between hospitals to intermediate and community-based care providers.

Discussion: The innovation in the organizational models of care has been often characterized by the introduction of a multidisciplinary perspective, in line with the complex needs of chronic patients. The predominant development of monitoring/management platforms for patients is a further confirmation of this trend. In terms of integration, the models achieved organisational and technological integration, which often occurred at the horizontal, rarely at the vertical or sectoral level.

Implications and future perspectives: the prevalence of complex integrated care models applying forms of horizontal integration across Europe highlights the common challenge of achieving comprehensive integration across primary, community, hospital and tertiary care services, further confirmed by the need to develop common interoperative DHIs and platforms⁴. Future research efforts should focus on the development of transversal communication and management platforms across services, along with the investigation of the effectiveness of current complex integrated care models.

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2. Pagliari, C. (2021) 'Digital Health and Primary Care: Past, Pandemic and Prospects', *Journal of Global Health*, 11, 01005. doi: 10.7189/jogh.11.01005.
3. Goodwin, N. (2016) 'Understanding Integrated Care'. *International Journal of Integrated Care*, 16(4):6. doi: 10.5334/ijic.2530.
4. Lehne, M. et al. (2019) 'Why digital medicine depends on interoperability'. *NPJ digital medicine*.2:79. doi: 10.1038/s41746-019-0158-1.