

## Person-Centered Integration of ICOPE Framework and Smart Technologies for Healthy Longevity

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As global population aging accelerates, innovative approaches to community-based care for older adults have become imperative. The Gan-Dau Healthy Longevity Plan implemented by Taipei Municipal Gan-Dau Hospital represented a focus shift in healthy aging through technology-enabled community integration and smart technologies. The plan combined the World Health Organization's Integrated Care for Older People (ICOPE) framework with advanced digital health technologies to monitor and enhance intrinsic capacity in community-dwelling older adults. The program deployed multiple innovative technologies, including smart mattresses for pressure injury and fall incidence, IoT-enabled intelligent nursing stations providing real-time patient monitoring, circadian-aligned environmental lighting systems that significantly improved sleep efficiency, and facial expression recognition systems in predicting behavioral and psychological symptoms of dementia. These smart hospital technologies function as a "community health control tower," extending beyond institutional walls through community-based sites (Gandaology Academy) that integrated digital biomarkers, wearable sensors, and AI-driven analytics for continuous health monitoring. Evaluation studies involving over 1,700 community-dwelling participants across two waves demonstrated that technology-enabled multidomain interventions produced significant improvements in healthy longevity. This paper contributed to the growing evidence supporting integrated, technology-enhanced approaches to healthy aging while highlighting critical considerations for scalability, equity, and ethical implementation. The Gan-Dau model demonstrated that addressing population aging required not merely technological innovation, but thoughtful integration of digital tools within person-centered care frameworks that prioritize human dignity and equity, offering a replicable blueprint for healthcare systems worldwide confronting demographic transitions.

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