Addressing Hong Kong's Ageing Population Crisis Through AI-Assisted Elder Care

CSCI 3250: Computers and Society — Case Study
Social Issue Analysis and Technology Proposal

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Abstract

Hong Kong is confronting one of Asia's most acute demographic crises as its population ages rapidly. According to government projections, the number of residents aged 65 and over is expected to nearly double, surging from 1.45 million (20.5% of the population) in 2021 to 2.74 million (36.0%) by 2046 [1]. This report identifies the structural inadequacy of Hong Kong's elder care system as a pressing social problem, and proposes an integrated AI-assisted care platform combining wearable health monitoring, remote telemedicine, and intelligent care coordination. The feasibility of this solution is evaluated against Hong Kong's existing digital infrastructure, regulatory environment, and social context. While the technology holds genuine promise, its success depends on equitable access, data privacy safeguards, and sustained government commitment.

Contents

1 Problem Identification

1.1 The Scale of Hong Kong's Ageing Crisis

Hong Kong's population is ageing at a pace that outstrips the capacity of its care infrastructure. According to the Census and Statistics Department, the number of elderly persons aged 65 and above is projected to nearly double from 1.45 million in 2021, accounting for 20.5% of the total population, to 2.74 million in 2046, or 36.0% [1]. This demographic shift translates directly into rising demand for medical services, long-term residential care, and community support that the current system is structurally unprepared to meet.

The waiting time for subsidised residential care homes for the elderly (RCHEs) illustrates the severity of the problem. With reference to information as at 31 May 2025, the average waiting time over the past three months for subvented homes and contract homes was 18 months [2].

1.2 What Surveys and Research Tell Us

Survey data paint a sobering picture of how this affects daily life. According to 2019 data cited in *The Healthcare Challenges in Hong Kong*, older adults aged 65 and above made up only 18% of the population, yet accounted for around half of all patient days and Accident and Emergency (A&E) admissions, as well as over one-third of General Out-patient Clinic (GOPC) and Specialist Out-patient Clinic (SOPC) attendances [3]. This disproportionate burden on healthcare services creates bottlenecks that affect care quality across all age groups.

Beyond healthcare utilisation, the social consequences are equally significant. In Hong Kong, caregiving responsibilities fall disproportionately on women, and the projected need for more women than men to leave the workforce for eldercare has been identified as a growing concern [4]. Housing conditions can also intensify vulnerability. A 2025 Sham Shui Po District Council paper, citing the 2021 Population Census, noted that Hong Kong had about 108,000 subdivided units housing more than 107,000 residents, and that Sham Shui Po contained about 22,000 such units, nearly one-fifth of the city's total; residents included elderly persons alongside other low-income groups [5].

1.3 Limitations of Existing Responses

The government has introduced initiatives such as the Community Care Service Voucher Scheme, which provides centre-based, home-based, and mixed-mode community care services for eligible elderly persons [6]. These measures have provided partial relief but have not addressed the fundamental mismatch between supply and demand, as reflected in persistent waiting times for

subsidised residential care services [2]. Longer-term manpower constraints are also substantial: the Labour and Welfare Bureau projected a shortage of 3,500 to 6,500 workers in social services and 13,000 to 18,000 in health services by 2028 [7].

2 Technological Proposal

2.1 Overview of the Proposed Solution

This report proposes an AI-Assisted Integrated Elder Care Platform (AIECP) that combines three interconnected components: continuous health monitoring through wearable devices, a remote telemedicine interface connecting elderly users with healthcare professionals, and an AI-driven care coordination system that aggregates data to support clinical and social care decisions.

The platform is designed to enable ageing-in-place, allowing elderly persons to remain in their own homes safely for longer, while providing care workers and family members with real-time visibility into health status and early warning of deterioration.

2.2 Component 1: Wearable Health Monitoring

Figure 1: Wearable health monitoring device for elderly users, tracking vital signs including heart rate, blood oxygen, and fall detection. *Source: CPR Guardian, https://www.cprguardian.com/blogs/latest-dementia-news-and-updates/wearable-tech-for-elderly-people-with-dementia*

Wearable devices such as smartwatches or lightweight wristbands continuously track vital signs including heart rate, blood oxygen saturation, body temperature, and physical activity levels. Fall detection algorithms, already commercially available in devices such as the Apple Watch and various medical-grade alternatives, can trigger automatic alerts to designated contacts or emergency services [8].

For Hong Kong's context, devices would need to be affordable, simple to operate for users with limited digital literacy, and available in Cantonese-language interfaces. Partnerships with local social enterprises or NGOs could support distribution to low-income elderly households.

2.3 Component 2: Remote Telemedicine Interface

A telemedicine module enables scheduled and on-demand video consultations with general practitioners, nurses, and specialists. This reduces the need for elderly persons to travel to clinics, a significant barrier for those with mobility limitations, and decreases pressure on accident and emergency departments for non-urgent conditions.

The Hospital Authority's HA Go application already provides appointment booking and health record access [9]. The proposed platform would extend this infrastructure to include live consultation capabilities and integration with wearable data streams, giving clinicians richer context during remote assessments.

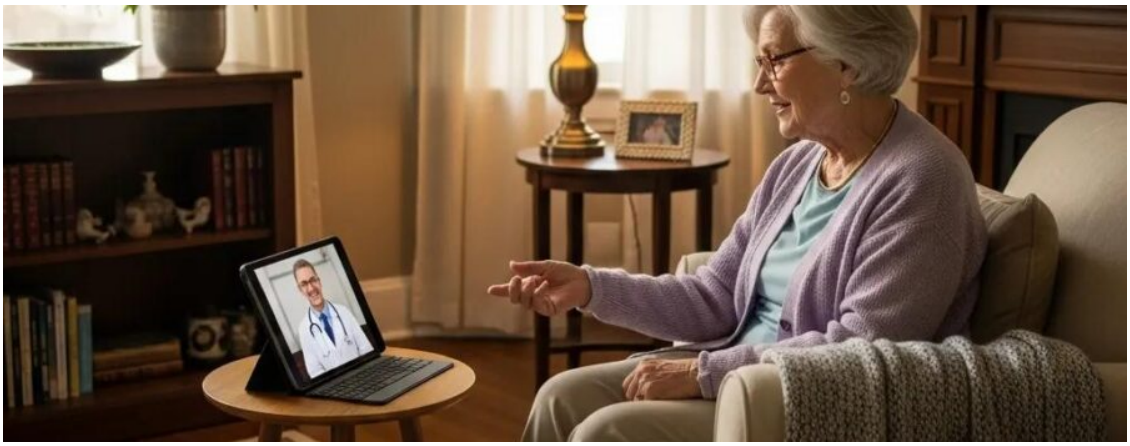

Figure 2: Telemedicine consultation interface showing an elderly patient connecting with a physician via video call on a tablet device. *Source: Desert Mobile Medical, https://desertmobilemedical.com/leveraging-tech-for-better-in-home-care/*

2.4 Component 3: AI-Driven Care Coordination

The coordination layer uses machine learning models trained on longitudinal health data to identify patterns associated with deterioration, for example, gradual reductions in activity levels that may precede a fall or hospitalisation. Care managers receive prioritised alerts and suggested interventions, allowing limited human resources to be directed where they are most needed.

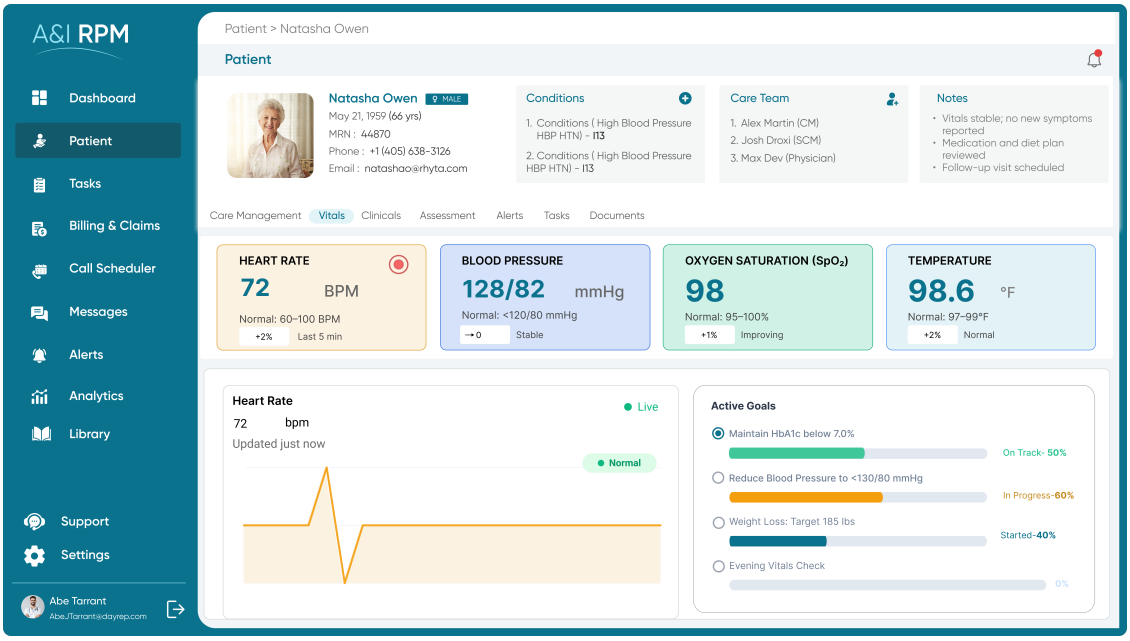

Figure 3: AI care coordination dashboard displaying aggregated health trends, risk scores, and care task assignments for a cohort of elderly clients. *Source: ANI Solutions, https://www.anisolutions.com/care-coordination/*

This component also handles scheduling of home visits, medication reminders, and communication between family members and professional carers, reducing the administrative burden on frontline workers.

3 Critical Thinking

3.1 Feasibility Assessment

Hong Kong possesses several structural advantages that make this proposal viable. The city has near-universal mobile connectivity, a well-developed public healthcare system with existing digital infrastructure, and a government that has expressed commitment to smart city development through

the Smart City Blueprint [10]. The density of Hong Kong's urban environment also facilitates logistics for device distribution and maintenance.

That said, meaningful barriers exist. A significant proportion of older adults in Hong Kong face difficulties using digital devices. According to the *Needs of Grassroots Elderly Population Report 2023*, as cited by Luo, Mo, and Li, 54.4% of people aged 60 and above reported overall difficulty using smartphones, and nearly 60% found COVID-related apps particularly difficult to use [11]. Any deployment would require sustained investment in digital literacy training, ideally delivered through existing community centres and social service organisations that already have established trust with elderly clients.

3.2 Evidence on Impact

Research on remote monitoring programmes provides cautious grounds for optimism. A major review published in the Journal of the American College of Cardiology found that telemonitoring, when coupled with a responsive care system, can meaningfully reduce hospitalisation rates among high-risk patients, though the authors emphasise that the technology alone is insufficient without trained care teams to act on the data [12]. This finding is directly relevant to Hong Kong's context: the platform's value depends not just on the sensors and algorithms, but on whether the healthcare system has the capacity to respond.

3.3 Data Privacy and Ethical Considerations

Continuous health monitoring generates sensitive personal data. Hong Kong's Personal Data (Privacy) Ordinance (PDPO) provides a legal framework, but its provisions were drafted before the era of pervasive health data collection and may require updating to address issues such as secondary use of data, algorithmic decision-making, and cross-border data flows [13].

There is also a risk that AI-generated risk scores could be used in ways that disadvantage elderly persons, for example, influencing insurance decisions or care eligibility assessments. Governance frameworks must ensure that algorithmic outputs are used to support, not replace, human professional judgement.

3.4 Counterarguments and Limitations

The most serious objection to this proposal is that it addresses symptoms rather than causes. Hong Kong's elder care crisis is fundamentally a resource allocation problem: there are not enough care workers, not enough subsidised places, and not enough funding. A technology platform does

not create more nurses or social workers. If deployed without parallel investment in the human workforce, the platform risks becoming a monitoring tool that generates alerts no one has the capacity to respond to.

A second concern is equity. If the platform is deployed primarily through private channels or requires users to purchase their own devices, it may benefit wealthier elderly residents while leaving those most in need underserved. Elderly persons in subdivided flats, with lower digital literacy, or without family support are precisely those who would benefit most, yet they face the greatest barriers to access.

There is also a question of consent and autonomy. Continuous monitoring can feel intrusive, and some elderly persons may resist wearing devices or sharing health data, particularly if they do not trust how the data will be used. Any implementation must take seriously the right of individuals to opt out without losing access to other services.

Finally, the technology itself carries risks. Algorithmic systems can produce false positives that cause unnecessary alarm, or false negatives that provide false reassurance. Over-reliance on automated alerts could erode the professional judgement of care workers over time.

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