

Adapting Health Systems to Population Aging: Policy Lessons From a Chile-Japan Comparison

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The European Conference on Aging & Gerontology 2026
Official Conference Proceedings

Abstract

Population aging is reshaping health systems worldwide, creating pressures on financing, service delivery, and long-term care (LTC). Countries are responding through different institutional arrangements; however, evidence on how these models influence health outcomes remains limited. This study compares the health systems of Chile and Japan to examine how demographic context and system design shape responses to population aging and population health outcomes. Using data from sources such as the World Bank, the OECD, and the World Health Organization, the analysis evaluates key indicators including demographic structure, health system financing, primary care organization, healthcare resources, and selected health outcomes. Japan, one of the world's most rapidly aging societies, operates a universal mandatory health insurance system supported by extensive healthcare infrastructure and strong financial protection. Chile, while demographically younger, is undergoing a significant demographic transition characterized by a rapidly increasing proportion of older adults. Its health system combines a mixed public–private insurance model with a community-centered primary care network emphasizing prevention and family health services. The comparison suggests that Japan's universal financing structure and healthcare capacity contribute to strong outcomes in life expectancy and mortality indicators, while Chile's primary care model strengthens accessibility and community-based prevention. From a policy perspective, Chile may benefit from Japan's experience in universal coverage and LTC systems designed to support very aged populations. Japan could draw lessons from Chile's community-centered primary care model and preventive programs aimed at promoting healthy aging and maintaining functional capacity among older adults.

Keywords: population aging, health systems, Chile, Japan, universal health coverage, primary care, long-term care, comparative policy

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Introduction

Population aging has become one of the defining policy challenges of the twenty-first century (Christensen et al., 2009; Ismail et al., 2021). Declining fertility, rising life expectancy, and epidemiological transition are increasing the proportion of older persons in many societies, with important consequences for health systems (Omran, 2005; Santosa et al., 2014). Aging populations generate rising demand for chronic disease management, long-term care (LTC), integrated service delivery, and sustainable financing arrangements (Christensen et al., 2009). These pressures are especially significant where health systems were originally designed for younger populations and an acute, episodic burden of disease (Omran, 2005; Santosa et al., 2014). Japan represents an advanced case of demographic aging and is widely recognized as a super-aging society, with one of the oldest population structures globally (Arai et al., 2015; Muramatsu & Akiyama, 2011). Chile, although demographically younger, is experiencing a rapid and advanced demographic transition marked by falling fertility, increased longevity, and a growing share of older adults (Dintrans, 2018; Gitlin & Fuentes, 2012). This demographic contrast makes the two countries analytically valuable for comparative health systems research: Japan provides an example of how a highly aged society has institutionalized responses through health and LTC arrangements, whereas Chile illustrates how a country in transition is adapting its mixed health system and primary care structures before aging pressures become more acute (Cerdeira et al., 2022; Dominguez-Cancino et al., 2020).

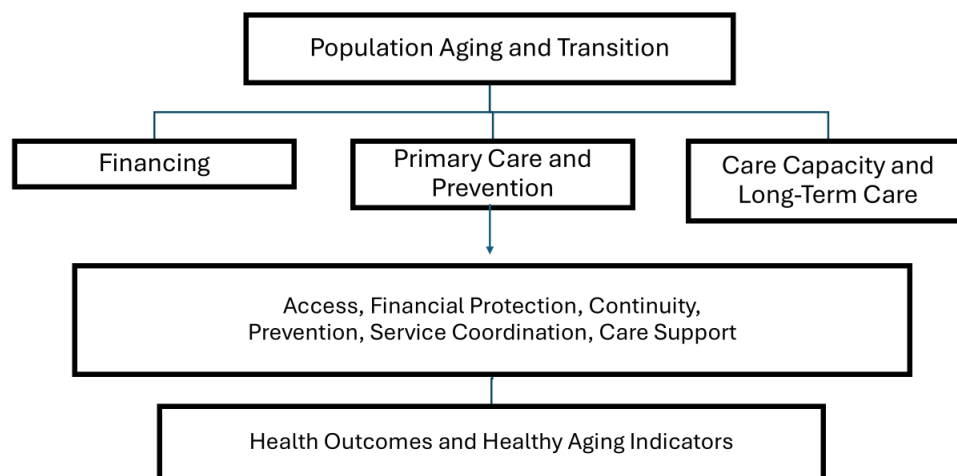
The two countries also differ sharply in institutional design. Japan operates a universal mandatory health insurance system that achieved population-wide coverage in 1961 and is characterized by broad financial protection, regulated benefits, and comparatively strong cost control through a nationally uniform fee schedule (Hashimoto et al., 2011; Ikegami, 2016; Ikegami et al., 2011). By contrast, Chile's health system combines a mixed public-private insurance structure in which contributors may choose between the public insurer FONASA and private ISAPREs, a design that has long raised concerns about segmentation and risk selection across population groups (Cerdeira et al., 2022; Sapelli & Torche, 2001). At the same time, Chile has developed a community- and family-centered primary care model that emphasizes access, prevention, quality improvement, and social participation at the municipal level, making primary care a distinctive pillar of its health system response (Barber et al., 2025; Dominguez-Cancino et al., 2020). This institutional contrast is important for understanding how each country is positioned to respond to population aging: Japan offers a model of universal financing and system integration, whereas Chile illustrates how a mixed insurance system can coexist with a comparatively strong primary care orientation (Dominguez-Cancino et al., 2020; Ikegami et al., 2011).

Chile's system is not simply a weaker version of a universal model. Rather, it has developed a strong primary care orientation and a community-based prevention architecture rooted in the family and community health model, which shifted primary care away from a purely biomedical approach toward a biopsychosocial and community-centered framework (Coss-Mandiola et al., 2022; Dominguez-Cancino et al., 2020). Chilean primary care has also played an important role in preventive health screening and chronic disease risk detection, including the identification of hypertension, diabetes, and dyslipidemia in routine primary care settings, with associated performance-linked resources and implementation incentives (Zamorano et al., 2025). This gives Chile an institutional feature that may hold value even for richer and older systems: a closer link between prevention, community services, and family-centered care, alongside municipal and local implementation structures that embed public health action in primary care delivery (Dominguez-Cancino et al., 2020; Maceira et al., 2024).

This paper compares Chile and Japan to address a simple but important question: how do demographic context and health system design shape national responses to population aging and related health outcomes? Rather than treating aging as a purely demographic problem, the paper approaches it as a systems challenge involving financing, primary care, infrastructure, LTC, and health outcomes. The comparison seeks to generate policy lessons in both directions: what Chile can learn from Japan's universal financing and LTC institutions, and what Japan can learn from Chile's community-centered primary care model. Figure 1 presents the conceptual framework guiding the comparative analysis of how demographic aging interacts with financing architecture, primary care, care capacity, and LTC to shape health system outcomes in Chile and Japan.

Figure 1

Conceptual Framework for Health System Adaptation to Population Aging



Methods

This study uses a comparative policy analysis based on secondary data and institutional review, an approach widely used in cross-national health systems research to examine how institutional arrangements relate to performance across countries (Anderson & Hussey, 2001; Cacace et al., 2013). The comparison draws on publicly available indicators and policy descriptions from major international datasets and official system sources, consistent with comparative frameworks that combine standardized indicators with institutional interpretation (Anderson & Hussey, 2001; Tolonen et al., 2021). The analytical focus is on five dimensions: (1) demographic structure; (2) health system financing and insurance design; (3) primary care organization and service orientation; (4) healthcare resources and delivery capacity; and (5) selected health outcomes and access indicators. Demographic indicators include the share of the population aged 65 years and above and the old-age dependency ratio, both of which are widely used in research on population aging and health system pressure (Bloom et al., 2015; Christensen et al., 2009). Financing indicators include health expenditure as a share of gross domestic product (GDP), the extent of financial coverage through mandatory prepayment, and institutional features of insurance design; these are standard measures in comparative assessments of health system performance (Anderson & Hussey, 2001; Gabani et al., 2023). Service delivery and resource indicators include physicians, nurses, hospital beds, and LTC workforce where available, reflecting common input measures used in international efficiency and performance comparisons (Evans et al., 2001; Gavurova et al., 2021). Outcome indicators include life expectancy, preventable mortality, treatable mortality, and selected acute care quality measures such as 30-day mortality after acute myocardial infarction (AMI) and stroke,

as these indicators are widely used to capture both broad population health and the effectiveness of healthcare systems (Anderson & Hussey, 2001; Nolte & McKee, 2004). These indicators were chosen because they reflect both overall system performance and the ability of the health system to respond to aging-related care demands (Anderson & Hussey, 2001).

The analysis is descriptive/ comparative. Its purpose is not to establish that one feature directly causes one health outcome, but rather to identify policy relationships between system design and observed performance under different stages of demographic aging. This approach is appropriate given the methodological complexity of cross-national health system comparison, including variation in data sources, indicator definitions, and the multiple social, economic, and behavioral determinants of health outcomes (Cacace et al., 2013; Tolonen et al., 2021).

Findings

Demographic Context: Nature Aging Versus Accelerated Transition

Japan and Chile face population aging from different starting points. Japan is widely recognized as a super-aged society and has long been treated in the literature as a leading case of advanced demographic aging, with major implications for pensions, health care, and LTC policy (Arai et al., 2015; Muramatsu & Akiyama, 2011). Chile, by contrast, remains demographically younger, but its aging process has been described as rapid and advanced within the Latin American context, driven by declining fertility, increased longevity, and epidemiological change (Marín & Wallace, 2002; Thumala et al., 2017). Chile's transition is therefore less advanced than Japan's, but it is moving in the same direction and must adapt its health system before age-related demand becomes more deeply entrenched.

This demographic contrast matters because health system needs differ by stage of aging. In very aged societies such as Japan, the policy challenge extends beyond access to medical treatment toward the sustained management of frailty, multimorbidity, dementia, disability, and LTC needs (Arai et al., 2015; Kasajima et al., 2022; Yamada & Arai, 2020). In comparatively younger but rapidly aging societies such as Chile, the more immediate policy opportunity lies in prevention, health promotion, early chronic disease management, and institutional reform before aging-related costs and care burdens become more difficult to contain (Dintrans, 2018; Marín & Wallace, 2002; Thumala et al., 2017).

Financing: Universal Mandatory Coverage Versus Segmented Risk Pools

Japan's health financing model is built on universal mandatory coverage with comparatively strong financial protection. OECD data show that the entire Japanese population is covered for a core set of services and that 85% of total health spending is financed through government and compulsory insurance arrangements. Japan spent 10.6% of GDP on health in 2024, broadly comparable to Chile's 10.5%, but the organization of financing differs importantly (OECD, 2025). The literature consistently describes Japan as a mature universal health coverage system based on compulsory social health insurance, broad benefits, and nationwide fee regulation, with financing arrangements that have historically supported relatively equitable access and cost control (Hashimoto et al., 2011; Ikegami et al., 2011; Matsuda, 2019). In this respect, Japan's financing architecture is often discussed as a coherent model in which pooling and regulation help contain fragmentation while sustaining broad population coverage (Ikegami et al., 2011; Kutzin, 2013).

Chile also devotes substantial public attention and resources to health, yet its financing structure is more fragmented. OECD data indicate that 97% of the population is covered for a core set of services, but only 59% of spending is covered by mandatory prepayment (OECD, 2025). Academic studies describe the Chilean system as a segmented mixed public-private model in which the public insurer FONASA, the public fund covering around 85% of the population (Fondo Nacional de Salud, 2026), and private ISAPRE insurers cover around 12% predominantly among higher-income households (Dintrans, 2018; Paraje & Vásquez, 2012; Sapelli, 2004). This segmentation weakens risk pooling and has been linked to inequalities in financial protection, access, and service use, with FONASA bearing a disproportionate share of older, poorer, and higher-risk beneficiaries (Dintrans, 2018; Oyarte et al., 2022). The policy implication is that similar aggregate levels of spending do not guarantee equivalent protection or outcomes. Japan's financing structure appears more coherent for an aging society because broader risk pooling and tighter regulation reduce fragmentation and provide a stronger basis for equitable access across the life course (Ikegami, 2016; Kutzin, 2013). Chile's model, by contrast, achieves broad formal coverage but weaker effective financial protection for groups with greater health needs, especially older adults, who are more exposed to recurrent care needs, chronic disease costs, and medication burdens (Dintrans, 2018; Paraje & Vásquez, 2012).

Primary Care and Prevention: Chile's Community-Centered Strength

A central distinction in the comparison is the organization of primary care. OECD reviews describe Chilean primary care as a key pillar of public health action, including screening, counseling, obesity interventions, and preventive programs. This role should be understood as part of broader public policy architecture rather than as a set of isolated initiatives. At the conceptual level, Chile's primary care model provides a person-, family-, and community-centered framework for care delivery. At the strategic level, (Person-Centered Integrated Care Strategy) ECICEP reorganizes care around chronic conditions and multimorbidity. At the operational level, programs in cardiovascular health, respiratory care, immunization, mental health, oral health, rehabilitation, and preventive examinations support risk detection, early intervention, follow-up, and health promotion across the life course.

Chile also uses performance-linked primary care indicators and negotiated targets between national health authorities and municipalities, creating a mechanism to align local service delivery with national public health priorities (OECD, 2019). Academic studies similarly describe Chile's primary care model as a family- and community-centered approach rooted in the Integral Family and Community Health Model, which shifted service delivery away from a purely biomedical orientation toward a biopsychosocial and preventive framework (Dominguez-Cancino et al., 2020; García-Huidobro et al., 2018).

This model matters for population aging because many age-related health challenges are not solved primarily through hospitals. Healthy aging depends on early risk detection, continuity of care, community support, and the maintenance of functional capacity. Chile's family- and community-oriented approach therefore offers a service logic that is well suited to delaying frailty, managing chronic disease before complications emerge, and supporting social embeddedness in later life (Dominguez-Cancino et al., 2020; García-Huidobro et al., 2018).

Japan's primary care model is less often described internationally as community-centered in the Latin American sense, although it is embedded within a highly accessible universal system. Japan's comparative strength lies more in universal access, financial protection, extensive provider availability, and institutionalized LTC than in an explicitly community-based

preventive primary care discourse. Research on Japan's aging response emphasizes the long-term care insurance (LTCI) system and community-based integrated care for older adults, suggesting a policy orientation more strongly linked to aging support and care coordination than to the family-community primary care framing seen in Chile (Yamada & Arai, 2020). The comparison therefore suggests not that Chile outperforms Japan overall, but that Chile may have developed a more visible preventive and community-facing service orientation that is relevant for healthy aging policy (García-Huidobro et al., 2018; Yamada & Arai, 2020).

Healthcare Resources and Delivery Capacity

The difference in healthcare capacity between the two countries is striking. Japan has 2.6 practicing doctors per 1,000 population and 12.2 practicing nurses per 1,000 population. Most notably, Japan has 12.5 hospital beds per 1,000 population, far above the OECD average of 4.2. Japan also has 6.8 LTC workers per 100 people aged 65 years and over, above the OECD average (OECD, 2025). Chile's healthcare capacity is much more constrained. OECD data reports 3.3 licensed doctors per 1,000 population and 4.4 practicing nurses per 1,000 population, alongside only 1.9 hospital beds per 1,000 population. No comparable OECD data are available on LTC workers for Chile (OECD, 2025). OECD analyses also note that Chile's public primary care and hospital systems face limited resolution capacity and resource constraints, contributing to referrals and waiting-time pressures (OECD, 2025). This interpretation is consistent with academic work describing waiting times and coordination problems as persistent challenges in Chile's mixed and capacity-constrained system (Acuna et al., 2022; Dintrans, 2018).

These differences are highly relevant to aging. Older populations consume more continuous, complex, and often multi-level services, especially where multimorbidity, frailty, and LTC needs become more prevalent with age (Dismore et al., 2023; Ferrucci & Kohanski, 2022). Japan's infrastructure and workforce scale make it better positioned to absorb high demand from a very old population, while Chile's capacity constraints may become more problematic as aging deepens (Dintrans, 2018; OECD, 2025). In this sense, Chile's strong primary care orientation may be necessary but not sufficient unless accompanied by greater financing integration and expanded age-related care capacity (Dintrans, 2018; Thumala et al., 2017).

Long-Term Care as a System Differentiator

One of Japan's most important institutional responses to population aging is the LTCI. Japan introduced its LTCI system in 2000 to address the growing care needs of older adults through a dedicated social insurance model that separates LTC from acute medical care and frames care dependency as a societal rather than purely family responsibility. Official Japanese sources further show that the system now supports millions of service users and is financed through a combination of insurance contributions, public funding, and user copayments (Yamada & Arai, 2020). OECD data also indicate that Japan has 6.8 LTC workers per 100 people aged 65 years and over, above the OECD average, underscoring the scale of its institutional LTC capacity (OECD, 2025). This is a major policy distinction because aging health systems cannot rely only on hospitals and outpatient medical care. They also need institutions that address frailty, disability, dementia, and support for activities of daily living. Research on Japan consistently presents LTCI as a central pillar of the country's aging response and as part of a broader community-based integrated care strategy for older adults (Yamada & Arai, 2020). In this sense, Japan's LTC system reflects a relatively advanced degree of institutional adaptation to very old population structures.

Chile, by contrast, has made important progress in primary care and access, but the academic literature continues to describe LTC as an underdeveloped policy area. Studies on Chile argue that, despite rapid demographic aging, the country still lacks a fully developed LTC system comparable to those found in more advanced aging societies, leaving care responsibilities heavily dependent on families and fragmented social protection arrangements (Dintrans, 2018; Villalobos Dintrans, 2018). This gap may become increasingly important as Chile's older population rises and informal family care becomes more difficult to sustain under changing household structures and labor-market conditions (Villalobos Dintrans, 2018). The comparison therefore suggests that LTC is one of the clearest institutional differences between the two countries. Comparative evidence from other Asian countries also shows that the transition toward formal LTC financing remains a major policy challenge in aging societies, particularly where family-based care has historically dominated (H.-N. Tran, Piboon, Dang, et al., 2025). Japan demonstrates the value of formalizing LTC as a distinct policy pillar within the broader health and social protection system, while Chile illustrates the risks of entering advanced demographic aging without a comparably institutionalized LTC architecture (Villalobos Dintrans, 2018; Yamada & Arai, 2020).

Health Outcomes

The countries also differ in key outcome measures. WHO data show that life expectancy at birth in 2021 was 84.5 years in Japan and 79.0 years in Chile (WHO, 2024). OECD 2025 country notes similarly report life expectancy at 84.1 years in Japan and 81.6 years in Chile (OECD, 2025). While differences across data systems reflect methodology and year conventions, both sources point in the same direction: Japan substantially outperforms Chile in longevity. OECD data further show that preventable mortality was 86 per 100,000 in Japan compared with 151 per 100,000 in Chile, and treatable mortality was 49 per 100,000 in Japan versus 78 per 100,000 in Chile. Japan also performed better in 30-day mortality after acute myocardial infarction (AMI) and stroke: 4.9% and 2.1%, respectively, compared with 8.3% and 8.7% in Chile (OECD, 2025). These differences are consistent with the hypothesis that Japan's universal coverage, stronger financial protection, and greater healthcare capacity support better aggregate outcomes in an aged population (Hashimoto et al., 2011; Ikegami et al., 2011). At the same time, Chile's 81.6-year life expectancy remains above the OECD average according to the OECD country note, showing that Chile's system performs relatively well on several broad indicators despite its structural fragmentation (Dintrans, 2018; OECD, 2025).

Discussion

The comparison highlights three broad lessons. Aging does not merely increase demand; it changes the kind of system that is needed. Older populations require not only curative medicine, but also continuity of care, chronic disease management, rehabilitation, social care, and support for functional ability. Japan appears better adapted to this reality because it combines universal financial protection with high service capacity and an institutionalized LTC system. The result is not perfect health, but a system architecture better aligned with the needs of advanced aging (Ikegami et al., 2011; Yamada & Arai, 2020). Second, prevention and community-based primary care remain essential even in an aging society. Chile's experience is valuable precisely because it shows that aging policy should begin before societies become extremely old. Community-centered primary care, municipal service delivery, screening, health promotion, and family health approaches may help delay disability and reduce downstream hospital dependence. For Japan, where the share of older adults is already very high, stronger

incorporation of community-centered prevention could support healthy aging and reduce avoidable deterioration in functional status (Dominguez-Cancino et al., 2020; Yamada & Arai, 2020). Third, nominal coverage is not the same as effective equity. Chile has near-universal population coverage, yet the literature shows weaker financial protection and persistent inequality across population groups within its segmented public-private system. This is a useful warning for countries undergoing demographic transition: partial insurance expansion without integrated risk pooling may leave older adults especially vulnerable, since they are heavier users of health services and pharmaceuticals (Dintrans, 2018; Ikegami et al., 2011). The paper therefore supports a broader view of aging adaptation. Evidence from other countries facing demographic aging similarly suggests that policy delay in elderly care can deepen system stress, inequity, and unmet care needs (H.-N. Tran, Piboon, Watanabe, et al., 2025). The critical issue is not simply how much a country spends, but whether financing, primary care, and LTC are institutionally aligned. Japan demonstrates the value of universal and coordinated financing under extreme aging. Chile demonstrates the value of embedding prevention and community reach into routine care before age-related demand peaks (Dintrans, 2018; Dominguez-Cancino et al., 2020; Ikegami et al., 2011; Yamada & Arai, 2020).

For implications, Chile may benefit from Japan's experience in several areas. It could deepen risk pooling and reduce fragmentation between public and private financing. OECD analysis already points toward the value of stronger pooling or even a more unified healthcare structure. For an aging society, broader risk sharing becomes increasingly important because care needs are concentrated in older age groups and are often costly and continuous (Dintrans, 2018; Ikegami et al., 2011; OECD, 2025). Second, Chile may need to expand age-related care capacity, particularly hospital resources, nursing capacity, and LTC services. Evidence from other Asian settings also suggests that nursing workforce shortages can become a major bottleneck in population aging adaptation, with implications for both care quality and long-term system resilience (H. Tran et al., 2024). Its current bed capacity and nursing density are low relative to OECD standards and far below Japan's. Without capacity expansion, demographic aging may translate into longer waits and more unequal access (Dintrans, 2018; OECD, 2025). Moreover, Chile could begin building a formal LTC architecture before aging reaches Japan's level. Doing so early would be strategically wiser than waiting until frailty and dependency become large-scale fiscal crises, especially given the literature describing Japan's LTCI system as a key institutional response to population aging (Dintrans, 2018; Yamada & Arai, 2020).

Japan can also learn from Chile. Chile's community-centered and prevention-oriented primary care model offers a reminder that healthy aging is not achieved only through hospitals and insurance generosity. Functional capacity in later life depends heavily on upstream intervention, local engagement, counseling, social support, and routine preventive care (Dominguez-Cancino et al., 2020). Second, Chile's primary care tools for aligning local performance with public health goals may hold lessons for how older populations are supported closer to home. As Japan continues to manage frailty, multimorbidity, and social isolation, stronger emphasis on community prevention and municipal integration may complement its existing LTC institutions (Dominguez-Cancino et al., 2020; Yamada & Arai, 2020). Next, the comparison suggests that highly developed systems should not assume infrastructure alone is enough. Japan's acute and longevity outcomes are strong, but prevention-oriented community models may help reduce later-life disability and improve quality, not just quantity, of years lived (Dominguez-Cancino et al., 2020; Ikegami et al., 2011; Yamada & Arai, 2020).

This paper has limitations. It relies on secondary data, which may vary in year coverage, definitions, and methods. The analysis is descriptive and comparative, so causal claims should be made cautiously. The health outcomes are influenced by broader determinants beyond health system design, including income, education, diet, inequality, and social norms. The paper emphasizes national-level institutions and does not fully capture subnational disparities, which are especially relevant in Chile given municipal variation in primary care capacity. Finally, the LTC comparison is asymmetric, since Japan's system is more extensively documented.

Conclusion

Chile and Japan offer contrasting but complementary lessons on how health systems can adapt to population aging. Japan shows that universal mandatory coverage, strong financial protection, high provider capacity, and formal LTC institutions can support strong outcomes even in one of the world's oldest societies. Chile shows that community-centered primary care and preventive service design remain crucial in managing demographic transition and promoting healthy aging before aging pressures become more severe. The central policy lesson is that successful adaptation to aging requires institutional alignment. Financing must protect households and pool risk broadly. Primary care must support continuity, prevention, and community access. LTC must be recognized as a core system function rather than an informal residual. Countries that strengthen these pillars before aging peaks will be better positioned to sustain both population health and system resilience.

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