

# Transformation of healthcare models and creation of integrated care systems in an aging society: A comparative perspective of the Netherlands, Japan, and China

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**SUMMARY:** Faced with the global challenges of population aging and a surge in dementia cases, healthcare models worldwide are undergoing profound transformation. The Netherlands' "dementia villages" concept simulates living environments, with their antipsychotic drug usage rate (11%) being significantly lower than in traditional facilities (52%). Japan has established over 12,000 "small-scale multi-functional" care facilities, striving to achieve "life in the community." Meanwhile, China is promoting community-embedded elderly care models, exemplified by Shanghai's plan to increase the number of daycare centers from 720 in 2019 to 919 by 2024, establishing a "15-minute elderly care circle." This commentary compares the Netherlands, Japan, and China across four dimensions: aging trends, innovative care models, the development of multifunctional healthcare systems, and end-of-life care philosophies. It assesses current policy developments and practical challenges, proposing that future sustainable care systems should integrate healthcare with community resources, institutional frameworks with ethical considerations, technological advancements with humanistic values, and education on death with the preservation of life with dignity.

**Keywords:** aging society, dementia care, community healthcare, integrated care, deinstitutionalization, end-of-life care

## 1. Global trends towards an aging society

According to the United Nations' 2023 "World Population Ageing" report, the global population age 60 and over is projected to increase from 1 billion in 2020 to 2.1 billion by 2050 (1). More than 100 countries already have an aging society, including all high-income and middle-income nations. Approximately 60 countries are classified as deeply aging societies. One such country, Japan already has a "super-aging society," with the proportion of the population age 65 and over reaching 29.1% (2023) (2). The same population in China is expected to exceed 30% before 2050, with rural aging rates far surpassing those in urban areas (3). The pace and degree of aging vary significantly across regions: Europe and East Asia (including Japan and China) are in a deeply aging stage, while regions like Sub-Saharan Africa remain predominantly youthful, though the pace of aging is accelerating in some countries. The United States is currently in the "aged or significantly aging" stage, with 19% of its population age 65 and over in 2023, and that figure is projected to reach 25% by 2050 (4). (Table 1)

## 2. Comparison of care models: Diverging paths in the Netherlands, Japan, and China

### 2.1. Netherlands' "dementia villages": Centralized care in a simulated environment

"Hogeweyk," established in 2009 in a suburb of Amsterdam, is renowned as the "world's first dementia village" (5). By creating a familiar atmosphere through life-like settings—including supermarkets, a theater, and cafés—the project helps reduce the incidence of behavioral and psychological symptoms of dementia (BPSD). Evaluation studies have indicated that the proportion of residents using antipsychotic drugs is significantly lower than in traditional care facilities (11% vs. 52%) (6). By integrating several small "household-style units" with daily living facilities such as shops, dining areas, and public spaces into a "micro-community," the model maintains round-the-clock professional care while maximizing the preservation of daily routines and a sense of social participation among individuals with cognitive impairments (7). A point that should be noted, however, is that although

**Table 1. Projected changes in the global population age 60 and over from 2020 to 2050**

Country/Region	Population Age 65+ (2023)	Projected Proportion (2050)	Status of a Super-aged Society
Japan	29.1%	38.4%	Peaked
Netherlands	20.1%	27.6%	Steadily rising
China	15.4%	31.4%	Rapidly rising
South Korea	17.5%	38.1%	Fastest-aging country
United States	19%	25%	Transitioning from "aged" to "super-aged"
United Kingdom	17%	23%	Steadily rising

*Data sources:* UN DESA (2023), Japan Statistics Bureau, State Council Population Development Report (2022), "2024 National Aging Development Bulletin," "World Population Prospects 2022".

this model demonstrates significant advantages in terms of residents' quality of life, management of BPSD, and family satisfaction, it requires substantial funding, land resources, and a set team of professionals, making it difficult to replicate on a large scale in resource-limited regions.

## 2.2. Japan: The "small-scale multi-functional" strategy and "life in the community" strategy

Since 2006, Japan has introduced the "Small-Scale Multi-Functional Home Care" system, which integrates day service, home-visit care, and short-stay services, limiting the service scope to within 30 users to strengthen the continuity of community living and life (8). By 2023, there were over 12,000 such facilities nationwide (9). This model operates on the logic of "day-care-centered, on-demand integration of home-visit and short-stay services," typically limiting the "registered capacity" to about 30 users to ensure a small scale, frequent contact, and individualized care. Japan's Ministry of Health, Labour, and Welfare, in its Comprehensive Community Care System (2021), set the goal of "enabling elderly residents to age in place within the communities they are familiar with" (10). Empirical studies evaluating this model and its variants have focused on organizational operations, staffing, care practice capabilities, and the capacity to support individuals with moderate to severe needs. For example, facility surveys indicate significant variations in average manpower input and service utilization rates (11). Moreover, Japan has launched nationwide pilot projects for a "Dementia-inclusive Society," integrating initiatives like "Memory Cafés" and "Dementia Supporters" into citizens' daily lives (12). Overall, Japan's small-scale multifunctional practice offers a deinstitutionalized pathway centered on "small-scale, multifunctional integration, institutionalized payment mechanisms, and local network support." However, its effective scaling nationwide still depends on the continuous enhancement of local finances, professional human resource development, and service capacity for those with moderate to severe needs.

## 2.3. China: Parallel exploration of community-embedded and diversified models

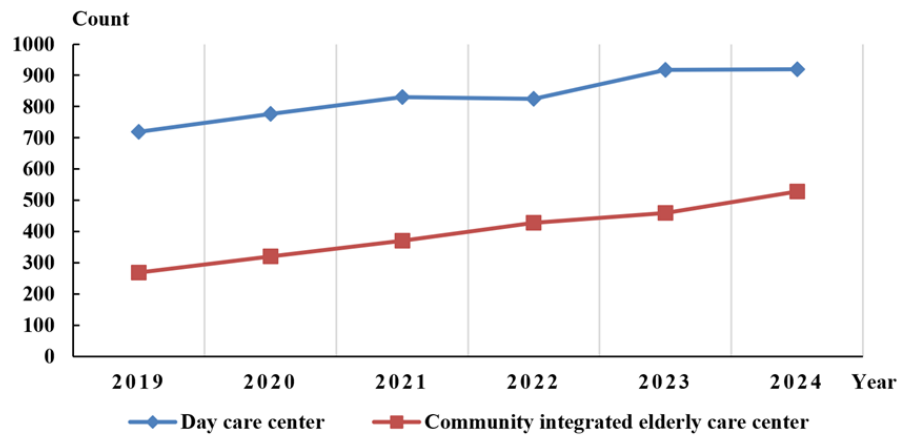
In China, the State Council issued a guideline to promote the development of national undertakings for the aged and improve the elderly care system during the period of the 14th Five-year Plan (2021-2025), and it explicitly proposed creating a service system that "coordinates home, community, and institutional care and combines medical care with health maintenance," promoting "community-embedded elderly care facilities" (13). Community-embedded elderly care originated in Japan in the early 1980s. Similar to Japan's "Small-Scale Multi-Functional Home Care" system, China's community-embedded elderly care operates within the community, relying on one or several core facilities (such as comprehensive community elderly service centers or senior care homes) to offer various forms of specialized elderly care, providing nearby, convenient, and professional "one-stop" comprehensive elderly services for older people living at home and in the community. At its core, it is "small-scale, multi-functional, and professional," positioning it as a "third model" between institutional care and traditional family-based care (Table 2).

This model has developed with Shanghai as a prominent example. In 2019, Shanghai released the "Shanghai Community-embedded Elderly Care Work Guidelines," elevating "embedded elderly care" to a municipal-level work system and practical project. This led to a significant increase in the number of embedded facilities such as comprehensive community elderly service centers, daycare centers, and home care beds, with the radius of service availability forming a "15-minute service circle." From 2019 to 2024, Shanghai's day care centers increased from about 720 to 919, and comprehensive community elderly service centers increased from about 268 to 529. This shift indicates a reorientation of service focus towards a model "predominantly based on home and community care, characterized by a denser network of embedded service outlets," as detailed in Figure 1.

Shanghai has devised distinctive practices in care models, creating "safe gardens for exploration" on rooftops in high-density urban environments to ensure outdoor activities for people with dementia. Because of its relatively high level of population aging, Shanghai has announced policy documents such as

**Table 2. Specific content of China's community-embedded elderly care model**

Items	Description
Residential Scenario	Individual residence + community elderly care service facilities
Activity Scenario	Individual residence + community elderly care service facilities
Service Items	Includes professional care, meals, spiritual comfort, rehabilitation, recreational activities, <i>etc.</i>
Funding Sources	Shared by individuals, families, communities, social forces, <i>etc.</i>
Operation Models	Publicly-built and privately-operated, market operation, collective economy, charitable mutual assistance, <i>etc.</i>
Service Facilities	Comprehensive community elderly service centers, day care centers, community meal assistance points, community living stations, senior care homes, <i>etc.</i>
Main Features	Aging in one's own home, aging at one's doorstep, "services finding people", Devolution and integration of resources



**Figure 1. Number of community-embedded elderly care facilities in Shanghai (Integrated Community Elderly Service Centers, Day Care Centers).** Data Sources: Shanghai Civil Affairs Bureau. Comprehensive Statistical Information on Shanghai's Elderly Population, Aging-related Undertakings, and Elderly Care Services. 2019-2024. <https://mzj.sh.gov.cn/20250519/25e2eb0eac1e46988596a077dc4f5d8d.html> (in Chinese)

the "Shanghai Special Plan for the Layout of Elderly Care Facilities (2021-2035)," which explicitly proposes piloting rooftop gardens in multiple comprehensive elderly service centers and street-level projects, aiming to create a "15-minute community life circle." These rooftop gardens typically follow principles such as "enclosed but visible boundaries, circular and dead-end-free walkways, and wide, unobstructed, and non-slip surfaces" to balance safety and sensory rehabilitation. Chengdu created "Memory Corners in Old Teahouses" to restore cultural memories as part of reminiscence therapy. Evidence-based research has indicated that reminiscence therapy can significantly improve cognitive function, quality of life, and reduce depression and neuropsychiatric symptoms in people with dementia and cognitive impairment. In Guangzhou, municipal policies are promoting an integrated "family-community-healthcare" collaborative model centered on "Dementia Care Managers." This model features a segmented responsibility system, screening and follow-up by family doctors, and a support hub for dementia care established by the Municipal Civil Affairs Bureau, forming a layered responsibility and referral loop within the service framework.

### 3. Building an integrated healthcare and nursing

#### system: Structure, challenges, and tools

##### 3.1. Multi-functional integrated service system: A proposed core framework

The core objective of the integrated care system for a super-aged society is to achieve continuity of "person/function-centered" services, spanning the period from prevention and early intervention to end-of-life care. The proposed core architecture is as follows (Table 3).

First, primary care acts as the first point of contact and continuous management hub for the multi-functional integrated system. Its foundation should be small-scale multi-functional home care, which integrates day care, home visiting services, and short-term stays based on individual needs, maintaining a small unit size of  $\leq 30$  people to ensure individualized care and stable caregiver relationships. Concurrently, the family doctor contracting system should be promoted, clearly defining the primary responsibility of family doctors in screening, chronic disease and cognition monitoring, care coordination, and referral (14). Second, community collaboration is responsible for localizing and normalizing professional services and social resources, forming a social ecological network supporting families and the elderly. Social workers undertake case management, resource guides,

**Table 3. Core framework of the multi-functional integrated service system**

Component	Core Objectives	Key Elements	Representative Indicators (Examples)
Primary Services	First contact, continuous management, short-term convalescence	Small-scale multi-functional facilities (day care/home visits/short-term stays), family doctor signing	Family doctor signing rate, day care attendance, facility bed occupancy, post-discharge transfer-back rate
Community Collaboration	Integration of community resources, social participation	Social worker case management, volunteer companionship, regional support centers	Social worker-to-elderly ratio, volunteer hours, activity participation rate
Medical Coordination	Diagnosis, complex condition management, acute response	Secondary hospital dementia clinics, referral/transfer-back channels, shared EHR	Referral timeliness, 30-day readmission rate, diagnosis rate
Technology Assistance	Risk warning, expanded coverage, personalized intervention	Sensor monitoring, AI cognitive training, remote follow-up platform	Fall alarm response, remote follow-up coverage rate, changes in cognitive scale scores
Family Involvement	Sustainable care, reduced burnout, early intervention	Caregiver training, convalescent services, family education	Caregiver burden score, convalescent service utilization rate, training completion rate

and family support; volunteer networks provide companionship, daily activity assistance, and short-term convalescent care. Community-based comprehensive support centers serve as community-level hubs integrating day care, rehabilitation, cultural activities, and training resources (15). Third, medical linkage ensures the management of clinical complexity and timely response to acute events, serving as the medical safety net for community care. Specialized dementia clinics should be established in regional secondary hospitals or hospitals with geriatric medicine capabilities and should be responsible for diagnosis, pharmacological and non-pharmacological treatment, complication management, and discharge planning. Moreover, rapid "community-hospital-community" referral and back-referral pathways should be established, incorporating shared electronic health records and standardized post-discharge follow-up procedures (16). Fourth, technological assistance is an important means to expand service coverage and improve early warning and personalized intervention capabilities. The use of environmental and wearable sensors for fall prevention and activity monitoring should be promoted. Remote follow-up platforms compliant with ethical and privacy standards should be created to enable regular remote assessments by family doctors/nursing teams. Additionally, validated AI-assisted cognitive training tools should be introduced for non-pharmacological rehabilitation. The implementation of technology must address data governance, accessibility design for users with low digital literacy, and interoperability with clinical records (17). Finally, family involvement is core to the system's sustainability, improving the quality of care and reducing the institutional burden. Systematic caregiver training (covering communication skills, daily care, and the handling of emergencies) should be standardized and included as a reimbursable service. Convalescent care and psychological support services should be established

to alleviate caregiver burnout. Early intervention education for families should be initiated at the diagnostic stage to reinforce the implementation of non-pharmacological interventions (18).

### 3.2. Challenges: Institutional fragmentation and human resource gaps

Japan is projected to face a shortage of more than 300,000 dementia care workers by 2025 (19), while China grapples with the rate of professional dementia care training falling below 20% (20), indicating a similarly severe workforce challenge. Creating the architecture mentioned earlier involves several structural challenges (Table 4).

First, institutional fragmentation and governance gaps present a major hurdle. In terms of care system governance, while the Netherlands has achieved relative integration of healthcare and care through its long-term care insurance (LTCI), significant variations in policy implementation across different municipalities have led to variations in the quality of services. Since implementing LTCI in 2000 and establishing Community Integrated Care Centers, Japan has strengthened community-level coordination to some extent, but institutional integration between health insurance, medical care, and hospice care remains insufficient. China faces the dilemma of inadequate collaboration among governing bodies, with overlapping responsibilities across healthcare, elderly care, health insurance, and civil affairs, and a lack of a unified payment and regulatory framework, resulting in a fragmented service continuum (21).

The second challenge is the insufficient workforce supply and little professional appeal. the Netherlands maintains a relatively robust human resource base for its long-term care workforce. However, with the surging number of dementia patients, the shortage of professional

**Table 4. Challenges in building an integrated healthcare and nursing system**

Challenge Category	Netherlands	Japan	China
Institutional Fragmentation and Weak Governance Coordination	LTCI as backbone, but significant municipal variations	Relatively mature LTCI, but insufficient integration between health insurance and medical care	Inadequate coordination among governance entities
Insufficient Human Resources and Little Professional Appeal	Shortage of professional caregivers, reliance on foreign workforce	Little appeal to care professionals, projected shortage of 690,000	About 500,000 professional long-term care workers, existing gap
Heavy Family Care Burden	Heavy psychological burden on family members	Approximately 100,000 people leave workforce annually due to caregiving responsibilities	Families bear the vast majority of care burden, insufficient alternative services
Lack of Coordination Mechanisms and Information Barriers	Information silos between regions	Progress through Community Comprehensive Support Centers but inadequate acute phase coordination	Lack of unified platform, weak inter-service coordination

caregivers is becoming increasingly apparent, alongside a growing reliance on foreign care workers. In Japan, the caregiving profession suffers from its image as the "3 ds" (a job that is difficult, dirty, and dangerous, often associated with low pay and status), leading to insufficient willingness among young people to enter the field. The Ministry of Health, Labour, and Welfare predicts a shortage of over 690,000 care workers by 2040. China also faces a significant care workforce gap, with only about 500,000 professional long-term care workers nationally against the needs of tens of millions of disabled older adults (22).

The third challenge is the heavy burden on family caregivers. The Dutch welfare system provides relatively generous coverage of family care, but for long-term care such as that for dementia, families still bear a significant emotional burden and are responsible for some daily care tasks. Japan's LTCI shares responsibility with the family to some extent, but the phenomenon of "caregiving-related job departure" remains severe, with about 100,000 people leaving the workforce annually due to caregiving. China absolutely relies on family care, with insufficient convalescent care and training systems, leaving families under significant economic, physical, and psychological pressure. Thus, although the three countries differ significantly in the degree of burden-sharing with the family, how to reduce the hidden costs and burdens of family care is a common challenge (23).

The fourth challenge is the lack of coordination mechanisms and information discontinuity. The Netherlands has achieved a certain degree of healthcare-care integration through municipality-led community networks, but information silos between regions persist. Japan has strengthened the connection between the community and healthcare through its Community Integrated Care Centers, yet continuity of care during the acute and end-of-life phases remains inadequate. China's coordination mechanisms are relatively weak. The family doctor contract system has not yet fully lived up to its potential, and the lack of unified case management

and information platforms connecting the community, hospital, and social services often leaves patients navigating disjointed systems, resulting in insufficient continuity of care (24).

#### 4. From care to "life's final chapter": Institutional ethics and cultural transformation

##### 4.1. Deinstitutionalization and "aging in place" until the end

Recently, deinstitutionalization and "aging in place until the end" have gradually transitioned from value-based visions to practical components within the policy toolkits of various countries. The Netherlands has been implementing "aging-in-place" policies, supporting older adults to receive end-of-life care in familiar environments without moving (25). The core of this strategy is shifting the focus of care from large facilities to a support system centered on the community and family, institutionally making "choosing to die at home/age in place" an accessible, realistic option. Japan has also incorporated "end-of-life home care" into health insurance, with about 30% of Japanese choosing to die at home in 2022 (26). This reflects both institutional accessibility and is closely related to Japan's long-term promotion of a family/community care culture and investment in local medical networks. In China, the National Health Commission issued the updated Palliative Care Practice Guidelines (2025 Edition) in August 2025, further standardizing service protocols and explicitly requiring the development of core processes such as multidisciplinary team assessment mechanisms and survival estimation (27). Numerous countries are using policy refinement and institutional guarantees as levers to translate the "aging in place until the end" vision into practical options, all pointing to the shift of care settings from facilities to communities and families and the enhancement of accessibility to end-of-life care choices for the elderly.



#### 4.2. Death with dignity and advance directives

To address the core ethical issue of "Who has the right to decide the end of life?", the three countries present distinctly different legal frameworks, institutional practices, and levels of social acceptance. Japan has established an Advance Directive system, yet its completion rate remains only about 10%. This indicates that even though institutional support has improved accessibility to "ending life at home," the written and operational expression of individual wishes is still not widespread (28). Under the Netherlands' euthanasia legislation, patient choice is broader. Since the implementation of the Termination of Life on Request and Assisted Suicide Act in 2002, the Netherlands has formed a relatively mature "legalization-review-supervision" system. The law not only allows euthanasia/physician-assisted suicide under strict conditions but also recognizes the referential value of patients' prior written wishes in specific circumstances (29,30). China's context is more complex. Overall, euthanasia/assisted suicide lacks nationwide legal authorization in China, and related actions may incur criminal responsibility under the current legal framework. Moreover, a unified legal status or nationwide institutional recognition for advance directives has not yet been established in China. Practice relies more on local pilot projects, hospital protocols, and academic promotion (31,32).

#### 5. Conclusion: The ethical foundation and future direction of a society in which elderly live

The reform of the healthcare system is not only an update of service structures but also a shift in societal philosophy: from disease-centered to people-centered, from an institution-focused to a life-focused paradigm, from a prolongation-of-life doctrine to a dignified end-of-life experience. The future sustainable care system should be based on "Co-creating Four Conditions." First is *Co-creating a healthcare system and the community*. The close integration of a healthcare system and the community is a foundational project for responding to aging. Japan's strategy of "Living within the Community" shows that embedding care into community life scenarios can both improve service accessibility and encourage community activity. China's promotion of the "15-minute elderly care circle" needs to further strengthen the community embedding of medical resources, learning from the Dutch interdisciplinary team experience to achieve integrated prevention, diagnosis, treatment, and rehabilitation services at the community level. The future direction should be to dissolve the boundaries between medical care and life, making care a normal part of community functions. Second is *Co-creating facilities and ethics*. Institutional design must embody ethical considerations. Given the shortage of care manpower, an institutional framework that both safeguards the rights

and interests of practitioners and that ensures the quality of services needs to be established. When promoting the use of technology, the ethical principle of "assistance rather than replacement" should be followed to avoid technological alienation. Third is *Co-creating technology and human connection*. Technological innovation and humanistic care need to develop synergistically. The Netherlands' reliance on technology to alleviate care shortages and China's leadership in formulating international standards for an age-friendly digital economy both highlight the potential of technology in addressing an aging society. However, Japan's experience reminds us that the use of technology must serve human needs; team collaboration and family support in its home-based palliative care cannot be completely replaced by technology. In the future, a virtuous cycle of "technology empowerment enhancing human warmth" should be created by using technology to improve efficiency, thereby allowing human connections to return to their essence. Fourth is *Co-creating education on death and life with dignity*. Education on death is an important guarantee of life with dignity. As aging progresses, there is an urgent need to incorporate education on death into the public health system, fostering a rational and calm attitude towards life through various channels such as schooling and public awareness campaigns. Only when society can face death openly can we truly achieve dignity at the end of life.

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