

The latest policies, practices, and hotspots in research in conjunction with the aging of Japan's population

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SUMMARY Population aging is a global concern, and Japan currently has the world's highest proportion of an aging population. In 2020, the population age 65 and over accounted for 10% of the global population, while this proportion was 29% in Japan, and it is expected to reach 38.4% in 2065. The average life expectancy in Japan in 2022 was 81.05 for males and 87.09 for females. At the same time, Japan's healthy life expectancy continues to increase, and it is increasing at a faster rate than the average life expectancy, with males expected to live 72.68 years and females expected to live 75.38 years in 2019. This is causing the social role of elderly people in Japan to constantly change. The Japanese Government continues to adjust its policy orientation, to improve the health level and social participation of the elderly, improve the accessibility of long-term nursing services and the treatment of nursing professionals, and improve the pension system. By 2025, one-fifth of people in Japan are expected to suffer from dementia. Japan has implemented a series of policies to create a dementia-inclusive and less risky society. The proportion of the population ages 65 and over living alone in Japan increased from 4.3% among males and from 11.2% among females in 1980 to 15.0% among males and 22.1% among females in 2020, representing a sustained increase. Changes in the composition of the population have prompted sustained attention to the personalization and diversification of elderly care. At the same time, Japanese researchers continue to utilize scientific and information technology to innovate elderly care products, improve the efficiency of elderly care, and provide intelligent elderly care.

Keywords Japan, policy, aging, dementia, innovation

1. Population aging

The global phenomenon of population aging presents profound challenges to nations across the globe. The population over the age of 65 years is growing more rapidly than the population below that age. As a result, the share of the global population age 65 and over is projected to rise from 10% in 2022 to 16% in 2050 (1).

Japan has a superannuated population; people age ≥ 65 accounted for 29.0% of the country's population in 2022, which is the highest proportion in the world (2). The issue of population aging in Japan is expected to become even more severe over the next 40 years, with the proportion projected to rise to 38.4% by 2065 (3). The average life expectancy in Japan in 2022 has become 81.05 years for men and 87.09 years for women, representing the world's longest longevity (4). At the same time, Japan's healthy life expectancy continues to increase, and it is increasing at a faster rate than the

average life expectancy, with males expected to live 72.68 years and females expected to live 75.38 years in 2019 (2). This has led to a continuous evolution of the social roles of elderly individuals in Japan, with the changing demands for social participation and healthcare among the aging population. Maintaining the health and functional abilities of elderly individuals, as well as ensuring their quality of life and healthcare, has been a focal point of policy discussions and research in Japan, yielding internationally recognized results.

The challenge of population aging exists in both developed and developing regions. Providing economic security and healthcare for the elderly is a politically sensitive topic. Japan's decades-long efforts and systematic approach have resulted in higher levels of health among the elderly population and widespread access to healthcare and long-term care. Sharing Japan's experiences is crucial for other countries around the world. This study summarizes Japan's latest policy

practices and research trends since 2018, providing valuable insights for global responses to aging.

2. Recent support policies for population aging in Japan

2.1. Improving the social participation of the elderly

Japan has implemented a series of policy measures to enhance the level of health and social participation of the elderly population in order to create a sustainable aging society. In 2018, the Cabinet approved The Guideline of Measures for Ageing Society (5), providing comprehensive guidance for mid-to-long-term public measures to address an aging society. The document pointed out that the trend of defining individuals age 65 and over as elderly is no longer realistic as the physical age of elderly individuals tends to be younger. In 2021, the Act on Stabilization of Employment of Elderly Persons was revised to require employers to take measures to provide their employees with opportunities to work up to the age of 70 (6).

The Healthy Japan 21 strategy, spanning from the first term (2000-2012) to the second term (2013-2022), and subsequently the third term that was implemented in 2023, is committed to extending healthy life expectancy (7,8). Japan has also comprehensively promoted health by implementing a series of interventions such as diet and exercise (9) (Table 1).

2.2. Health care for the elderly

As the country's demographics change, the disease structure changes, and therefore the demand for health care changes. In order to ensure continuous and comprehensive access to long-term care for the elderly population, Japan is actively working to improve long-term care and personnel training. To enable the elderly population in need of medical and nursing care to continue living in familiar communities, Japan has implemented a series of measures to promote home medical care and nursing. These include the 8th National Medical Strategic Plan (10) and the Guidelines for Promoting Home Medicine and Nursing

Table 1. Key events in Japanese policies on population aging from 2018 to 2023

Classification	Year	Policies and Events
Social participation	2018	The Guideline of Measures for Ageing Society was approved. They reviewed standardization by age and aim to create an age-free society in which people of all ages can live and work happily.
	2020	The Dietary Reference Intakes for Japanese (2020) focuses on preventing malnutrition and physical weakness in elderly individuals.
	2021	The Act on Stabilization of Employment of Elderly Persons was revised to gradually extend retirement age to 70.
	2023	The third term of the Healthy Japan 21 strategy was announced with the continuation of extending healthy life expectancy as its ultimate goal.
Health care	2020	The 8 th National Medical Strategic Plan defines the functions and roles of "medical facilities that play an active role in home medical care" and "medical facilities necessary for home medical care".
	2020	Guidelines for Promoting Home Medicine and Nursing Collaboration Projects (Version 3) were announced, aimed to establish a community-based integrated care system.
	2021	Partial revisions were made to Long-term Care Insurance to establish a system to facilitate the provision of home medical care and nursing.
	2021	Nursing fees were modified to promote better treatment of caregivers' and better working conditions.
	2021	The Child and Family Care Leave Act was revised to relax requirements for fixed-term contract workers to take family care leave.
Economic security	2020	The National Pension Act was partially revised to enhance the functionality of the pension system.
	2021	The 8 th term of the Long-term Care Insurance Project Plan was released to facilitate the provision of insurance benefits for long-term care.
Dementia assistance	2018	The Ministerial Council on the Promotion of Dementia Policies was set up to further promote dementia policies.
	2019	The National Framework for Promotion of Dementia Policies was adopted at the Ministerial Council, using a whole-of-society approach to reduce the risk of dementia and provide a better quality of life for those living with dementia.
	2019	The Ministerial Council devised the Outline for the Promotion of Dementia Policies to enable people with dementia to continue to live their lives in their own way in the communities they are familiar with.
	2023	The "Basic Act on Dementia to Promote an Inclusive Society" was enacted to enable those with dementia to live in dignity with a sense of purpose.

Collaboration Projects (Version 3) (11) in 2020. In 2021, Long-Term Care Insurance was partially revised to create a system to facilitate the provision of home medical care and nursing (12). One of the key focuses of the modification of nursing fees in 2021 was to promote better treatment of caregivers and better working conditions (13). The Child and Family Care Leave Act was amended in 2021 to relax requirements for fixed-term contract workers to take family care leave in order to assist home caregivers in balancing work and care (14).

2.3. Economic security

Japan's social security systems, such as Pension Insurance, Medical Insurance, and Nursing Care Insurance, provide financial security for the elderly to receive social services. Since 2000, Japan has promoted a long-term care insurance system, financed by social insurance and taxes, to ensure that the burden on older persons is reduced (15). To maintain financial sustainability, Japan has been dynamically adjusting economic security policies. For instance, laws such as the National Pension Act (16) were amended in 2020 to enhance the functionality of the pension system. In 2021, the government released the 8th term of the Long-term Care Insurance Project Plan (17).

2.4. Dementia assistance

Long-term cognitive diseases such as dementia are on the rise as the population ages, and Japan has one of the highest rates of dementia in the world. With nearly 5 million Japanese living with dementia in 2015, and with one in five people in Japan expected to have dementia by 2025 and one-third of the population expected to live with the disease by 2060, the societal burden of dementia is unquestionably high (18). Japan hopes to create a dementia-inclusive and less risky society through a series of policies. In 2018, Japan established the Ministerial Council on the Promotion of Dementia Policies to promote dementia policies (19). In 2019, the Council adopted the National Framework for Promotion of Dementia Policies (20), which adopted a whole-of-society approach by considering multiple interwoven psychosocial, environmental, and healthcare dimensions to reduce the risk of dementia and provide a better quality of life for people with dementia. That same year, the Council devised the Outline for the Promotion of Dementia Policies, which is based on the concepts of "symbiosis" and "prevention" to enable people with dementia to continue to live their lives in their own way in the communities they are familiar with. The Basic Act on Dementia to Promote an Inclusive Society was enacted in 2023 to promote policies that enable people with dementia to live with greater dignity (21).

3. The latest hotspots in research on population aging in Japan

3.1. Health promotion and disease prevention

In order to create a healthy and vigorous population with long lives, Japan has been actively promoting disease prevention and health promotion, gradually shifting from a traditional focus on physical health to a focus on multiple dimensions of health, including physical, mental and social health, and actively promoting healthy lifestyles based on "nutrition, exercise, and recuperation." In recent years, the creation of nutritional and dietary support systems has been a hot topic of research in order to facilitate the independent living of the elderly and prevent them from becoming seriously ill. Exercise and nutritional interventions to prevent frailty in the elderly have also been a hot topic of research. To prevent malnutrition caused by oral muscle weakness, oral management in the elderly population is also a hot research topic. Rehabilitation systems for the acute, recovery, and chronic phases of disease are also a hot research topic in Japan in order to reduce the disease disability rate of common diseases in the elderly, such as stroke and myocardial infarction, and to help patients to better transition or prevent further deterioration.

3.2. Personalized aging and care

As the family structure of the elderly population changes and the disease spectrum changes, the needs of the elderly for elderly care continue to change. In 1980, the proportion of the population age 65 and over living alone in Japan was 4.3% for males and 11.2% for females, but this proportion increased to 15.0% for males and 22.1% for females by 2020, and it continues to rise (2). How to meet the medical needs and care needs of elderly people living alone is a topic of future research. Elderly people with a good financial base have higher demands and better purchasing power for elderly care, and the number of paid elderly care facilities has gradually increased in Japan in recent years. The provision of elderly care to special groups such as elderly persons with dementia or disabilities is also a continuing focus of research.

3.3. Technological innovation and smart elderly care

There are more serious problems in a superannuated population with a declining workforce, such as the growing demand for health care and long-term care and a shortage of health care workers. The government estimates that Japan will have a shortage of 370,000 nurses and other care professionals by 2025 (22). The Japanese Government continues to explore ways to use information and communications technology to improve the efficiency of care for the elderly and to

Table 2. Examples of technological innovations and smart elderly care in Japan

Classification	Example
Increasing social participation	An application for cellphones and computers that allows wheelchair users and those who are mobility-challenged to clearly see the accessibility of public spaces, sharing barrier-free-related information from all over Japan and hopefully around the world in the near future.
Improving social inclusion	A virtual reality (VR) tool that allows people to experience multiple symptoms of dementia in virtual reality from the perspective of a person with dementia, to increasing awareness and deepening understanding of dementia, and promoting better dementia care and dementia-friendly environments.
Health monitoring	A health management system that focuses on the vital statistics that caregivers monitor daily, helping them find any shifts at early stage and notifying the caregiver using an alert function, allowing individualized management of the health status of seniors.
Functional assistance	A wearable device that detects the expansion of the bladder using ultrasonic waves and predicts when the user needs to use the toilet and provides reminders, helping elders with bladder control issues maintain self-esteem and improving their quality of life.
Assisted care	Assisted care machines based on the "no-lift care" concept that allow caregivers to care for the elderly without relying solely on the caregivers' physical strength and that help seniors maintain their ability to carry out daily activities while receiving the care they need.
Dementia assistance	A jell sticker attached to a dementia patient's fingernail and toenail that features a QR code that can be read by a smartphone when they are disoriented to obtain the phone number of a family member, care facility, or other caregiver selected by the person and provide rescue accordingly.

utilize innovations in science and technology to create new initiatives for an aging society. Japan's Long-term Care Insurance included a robotic-assisted walker in its list of reimbursable technologies in 2016, and since then the list of approved robotic technologies has continued to expand (22). Table 2 lists some examples of technological innovations to address aging in Japan in recent years (23).

3.4. Integrated community-based care systems

Japan is also in the process of creating a community-based integrated care system by 2025, when the baby boomers will be age 75 and over (18). The purpose of this system is to comprehensively ensure the provision of healthcare, nursing care, preventive care, housing, and livelihood support to the elderly. In order to implement this community-based integrated care system, the government has proposed the concept of "mutual aid communities". People in the community (as well as various entities) must participate in and connect resources across generations and domains, beyond the "support providers" and "recipients" in various systems and areas. To achieve this concept, Japan is focusing on researching a reform framework that includes greater ability to solve regional problems, enhanced regional connections, enhanced community-based comprehensive support, and optimization of nursing professionals.

4. Conclusion

The current work has analyzed the state of population aging in Japan, the latest policies related to social participation of the elderly, medical care security,

economic security, support measures for dementia among special groups, and hotspots in research on population aging in Japan, such as promoting extended employment for the elderly, home-based elderly care, and technological innovation. Japan continues to reform its healthcare and nursing systems to improve the levels of services, to pay attention to personalized elderly care needs and services, to utilize advanced medical equipment, to promote a digital transformation of the healthcare system, to research new scientific technologies such as artificial intelligence and VR/AR, to create mutual aid communities, and to achieve satisfactory results in meeting the needs of the elderly. With the spatiotemporal changes in the demand for elderly care among the elderly population and the rapid advances in science and technology, policies and research priorities to address aging are also constantly evolving. However, there are still many problems that need to be urgently solved. Examples are how to ensure the elderly enjoy their old age and avoid forced labor in a social environment with "no retirement", alleviating the contradiction between continued advances in elderly care technology and the limited acceptance of new things by the elderly, and maintaining the financial sustainability of pension insurance to reduce the economic burden on the elderly. The use of new technologies to address aging is promising, but there are privacy and ethical concerns.

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